January 1953

AILWAY TRACK and STRUCTURES

He doesn't use this wrench much anymore!

with RELIANCE HY-PRESSURE HY-CROME *spring washers on the job!*

IN SPITE of heavy wheel loads and high speeds, your track joint bolts will stay tighter longer reducing time between maintenance periods.

Less maintenance when Reliance Hy-Pressure Hy-Crome Spring Washers are used on rail joint bolts. The result will be a savings in time and cost and an easing up of tight maintenance schedules.

Reliance Hy-Pressure Hy-Crome Spring Washers have been designed so that the automatic mechanical action of the helical coil spring washer will flatten at a predetermined applied load. They are manufactured from alloy spring steel to provide adequate reactive pressure and a wide range of reaction to compensate for looseness as a result of service wear.

Our railroad fastening engineers will be pleased to submit samples and engineering data on Reliance Hy-Pressure Hy-Crome Spring Washers for a test application on your track.

"Edgemark of Quality"

EATON MANUFACTURING COMPANY, RELIANCE DIVISION

OFFICE AND PLANTS • MASSILLON, OHIO

Standard Twin Hook Frog Plates are stocked in 23-, 27-, and 31-in. lengths. Other sizes can be made to order.

The Simplest Way to assure a Tight, Rigid Frog

No track foreman purposely allows a frog to be loose or badly aligned. But it sometimes happens; and when it does, the hazard is great.

Our suggestion: eliminate the danger of the loose, jiggly frog by installing Bethlehem Twin Hook Frog Plates.

They anchor the frog securely, preventing lateral movement in either direction. The frog stays rigidly aligned with the rails. No rattle, no play, no loosening up. Here's why:

Twin Hook Frog Plates are always installed in pairs, each plate having its own integral forged hook. During installation the two plates are laid parallel, touching each other, with one hook on each side of the frog base. A tight, snug grip results.

Plates are fastened to the ties by ordinary spiking —a quick, simple job. And here's another point you'll like. Since the plates are used in pairs, you can employ the same length at several *different* tie positions under different angle frogs. No need for a large and confusing variety of lengths.

These simple, sturdy frog plates are low in cost, and there's virtually no maintenance. They're a safety device that belongs under every frog. Why not ask for details? Folder 390 will bring you the full story.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

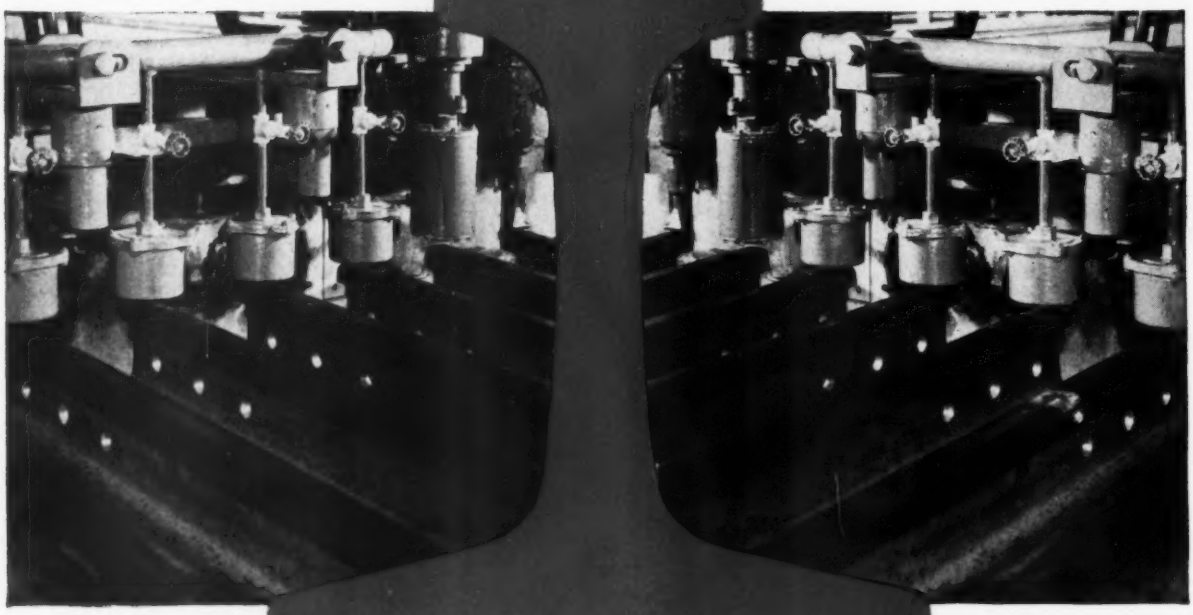
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM TWIN HOOK FROG PLATES

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year $2.00 (special rate to railroad employees only, one year $1.00). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 49, No. 1.

to withstand rail-end wear . . .



CF&I

MILL END-HARDENED RAILS FOR WESTERN RAILROADS

Greater speeds and heavier payloads require rails that can deliver increased performance. Western Railroad needs are met with CF&I End-Hardened Rails.

Precision equipment, consisting of successive radiant heating units and a compressed air quench, simultaneously end-hardens both ends of each CF&I rail.

Automatic controls assure accuracy of required temperature, heating time and quench. This method provides rails with uniform hardness patterns.

You are invited to visit our Pueblo Plant to inspect these new facilities.

RAILS AND ACCESSORIES

THE COLORADO FUEL AND IRON CORPORATION

DENVER, COLORADO

CF&I

1066

where

SMOOTH HANDLING

is a requirement!

REAL smoothness of handling knocks minutes off every job. It is when you are up against the tricky jobs that you find out what crane performance really means. When you're setting rail or balancing 50 ft. of 60 in. pipe to shove it into the next section, holding bridge steel or stone for the setters, or swinging a steam hammer over the sheeting — that's when you find out what smoothness of operation means.

The Northwest "Feather-Touch" Clutch Control gives easier operation with freedom from the complications of delicate parts such as pumps, valves, compressors and tubing. Uniform Pressure Swing Clutches give smooth swing, reduce the danger of whipping and give increased accuracy in setting. Throttle control permits minute movements in handling the load and there is a Northwest Boom Hoist to fill every operating requirement. These Northwest advantages mean time saved on the job and greater safety for the setters. Why not plan to have a Northwest? Talk to a Northwest Man. It will pay you to place an order.

NORTHWEST ENGINEERING COMPANY
1513 Field Building, 135 South LaSalle Street
Chicago 3, Illinois

NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE

DOES THINGS NO TRACK-TYP RIG CAN DO

How many holes in your belt?

● Perhaps none—but *every* belt is adjustable within the limits of a few inches to better fit slightly varying waistlines.

Similarly, the powerful, forged and tempered spring steel arm of a True Temper Rail Anchor adapts itself to fit the differences in rails. Whether the rail base is new, or worn and corroded, the rail anchor is easily and positively fastened to keep the rail where you want it. Yet it is just as easily removed for re-application when desired.

The resulting economy and efficiency make True Temper Rail Anchors the first choice on thousands of miles of track.

Made and sold only by

TRUE TEMPER Corporation

RAILWAY APPLIANCE DIVISION
GENERAL OFFICES, CLEVELAND, OHIO
Factory: North Girard, Pa.

DISTRICT OFFICES:
2033 Daily News Building, Chicago, Illinois
105 Duane Street, New York, N. Y.

REPRESENTATIVES AT:
St. Louis, Missouri
St. Paul, Minnesota

TRUE TEMPER

ALSO MAKERS OF TRUE TEMPER SAFETY RAIL FORKS • BALLAST FORKS • TRACK SHOVELS • SCOOPS • SCUFFLE HOES • AXES • HAMMERS • HATCHETS • SCYTHES • WEED CUTTERS

Best in a tight scrape

Ditching, banking, or leveling right-of-ways. Slogging through muck or slugging it out with rock. The "Caterpillar" No. 40 Scraper teamed with a "Cat" Diesel D4 Tractor is an off-track work horse for the Nashville, Chattanooga & St. Louis Railway.

"They are 75% better than the costly hand shovel method and save me 20% over other equipment," reports R. O. Corbitt, supervisor of construction.

These scrappy units are working a 40-mile stretch on the Chattanooga Division. Averaging 3 round trips an hour, each "Caterpillar" team hauls 4½ yards a half-mile. Part of their work is in earth with 50% rock, the rest in muck.

Mr. Corbitt singles out 2 of the No. 40 Scraper's many features for particular praise: its maneuverability at close quarters and the rear wheel adjust-to-raise pan to go over tracks at crossings.

Working in tight spots is easy for the No. 40 Scraper because of its short turning radius. In addition its high apron lift and forced ejection assure faster, cleaner spreading. This results in shorter cycle time.

You can learn about this hard-working pair — the Diesel D4 Tractor and No. 40 Scraper — from your "Caterpillar" Dealer. He can tell you how "Caterpillar" equipment will pay off in higher production and economy on your job.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

Economical

WEED CONTROL SERVICE

Through Strategically Located Plants

Shown above are the eight Chipman Chemical Company weed killer plants in the United States . . . strategically located in major railroad centers to give you economical service, both in materials and application of chemicals. Also shown are plants operated by Chipman Chemicals, Ltd., the associate company in Canada. These plants afford economical, convenient servicing of Canadian lines.

Strategically located plants and a complete line of *proven* weed killing chemicals are two big reasons why you can get dependable, low cost weed control service . . . backed by 40 years of experience . . . from either of these two companies.

Write today for further information and descriptive literature on the weed killers listed below.

ATLACIDE LIQUID & SPRAY POWDER • CHLORAX LIQUID & SPRAY POWDER
TCA-CHLORAX LIQUID • ATLAS "A" WEED KILLER • BRUSH KILLER

CHIPMAN CHEMICAL CO.

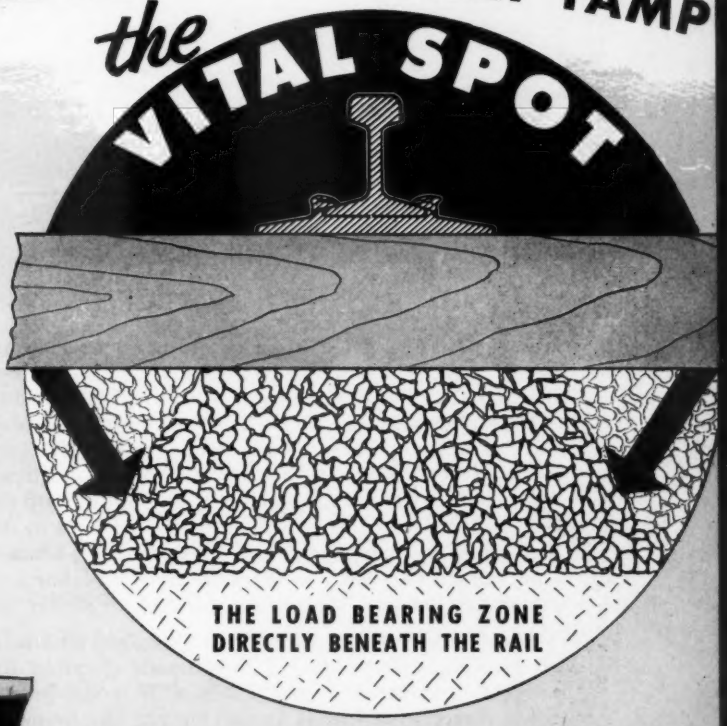
Manufacturers of
Railroad Weed Killing Chemicals Since 1912

TO LOWER THE COST OF MAINTAINING TRACK *and* ROLLING STOCK . . .

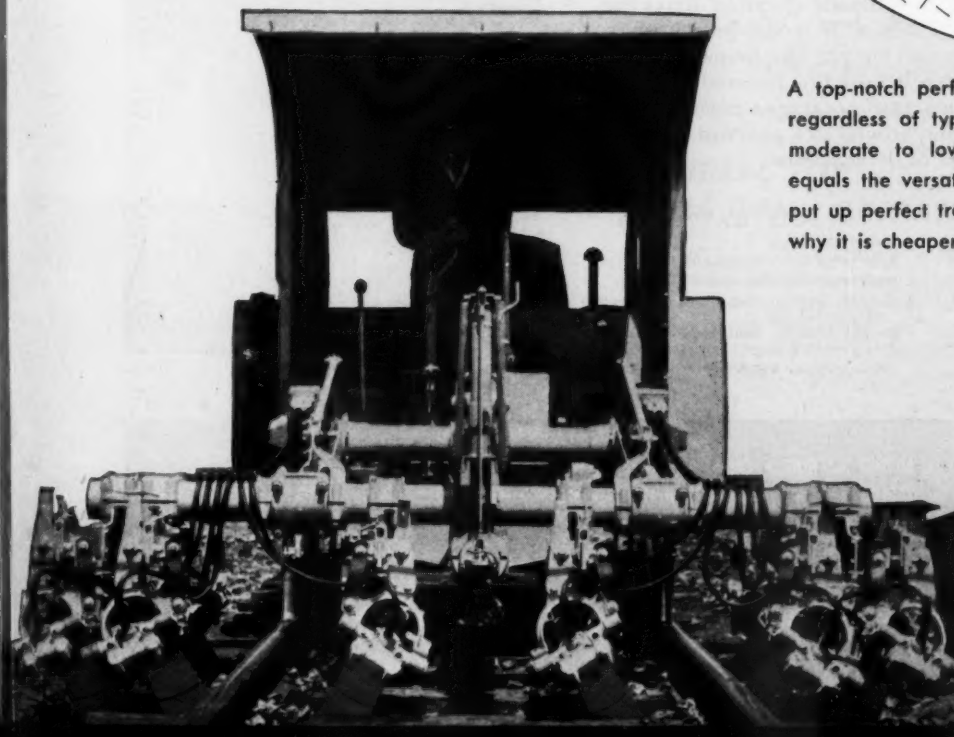
Use JACKSON MULTIPLES

THE ONLY ON-TRACK MACHINES THAT TAMP *the* VITAL SPOT

See how the blades of the JACKSON penetrate and tamp directly beneath the rail, that vital area where greatest weight is imposed. No other on-track tamper is built to do this, and therefore no other can give you the thorough consolidation of ballast at this all-important point and consequent longer-lasting job that the JACKSON achieves. The net result is track that requires considerably less maintenance — that stays smooth even under very heavy high-frequency traffic — that's kind to rolling stock and reduces the cost of maintaining it.



A top-notch performer in any major ballast inserting operat regardless of type of ballast used, and equally efficient in moderate to low-lift surfacing operations, no other equipm equals the versatility of the JACKSON MULTIPLE or its ability put up perfect track at the lowest cost per mile. Let us show why it is cheaper to own them than to do without them.

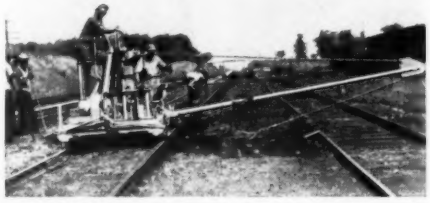


MFD. BY
JACKSON
VIBRATORS
INC.
LUDINGTON, MICH

ELECTRIC TAMPE
& EQUIPMENT C
LUDINGTON, MIC

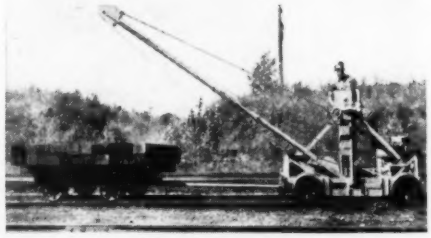
THE NORDBERG "GANDY"

SAVES TIME – CUTS COSTS ON 3 DIFFERENT OPERATIONS*



* FOR PULLING TIES

* FOR INSERTING TIES



* FOR MATERIAL HANDLING

The Nordberg GANDY—one of the latest developments for better, faster maintenance at lower cost—is a triple-purpose machine: (1) TIE PULLER: (2) TIE INSERTER: and (3) MATERIAL HANDLING CRANE. The Gandy is designed to perform these functions primarily in connection with out-of-face raising and tie renewal. It is used to pull out old ties, pull in new ties, pile or load old ties, set machines on or off the track, and distribute new ties, including hauling them to the work location. Two men operate the Gandy which, because of its "mechanical muscles", removes the physical labor from each job and makes possible uniform production all day long.

The Gandy is mounted on four 16" flanged wheels. A 5 HP air-cooled gasoline engine with hydraulic coupling drives the propulsion mechanism and a winch. It is self propelled in either direction at speeds up to 12 mph. The frame carries a 17 ft. telescoping boom which is raised or lowered mechanically and swung manually in a 180° arc from a position over the center of the track in front, around to a position over the center of the track in the rear of the machine.

For further details, write for Bulletin 201.

SPECIFICATIONS:

Weight—2300 lbs.
Boom length fully extended—17 ft.
Boom length fully telescoped—10 ft. 4 in.
Carrying capacity, full boom, no counterweight—400 lbs.
Carrying capacity, short boom and counterweight—1000 lbs.
Lifting capacity, clamped to track—2000 lbs.

R153

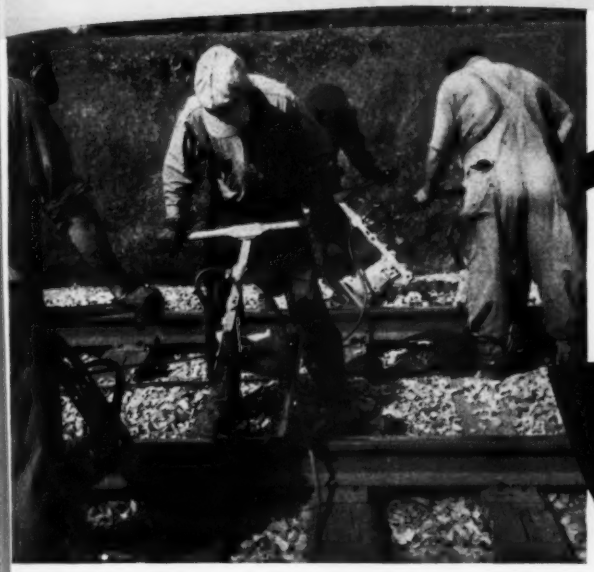
USE NORDBERG "Mechanical Muscles"* TO DO A BETTER, FASTER MAINTENANCE JOB AT LOWER COST . . .
*Copyright 1952, Nordberg Mfg. Co.

ADZING MACHINE • CRIBEX® • BALLASTEX® • SCREENEX® • GANDY • DUN-RITE
GAGING MACHINE • POWER JACK • POWER WRENCH • RAIL DRILL • RAIL GRINDERS •
SPIKE PULLER • TRAKGAGER • TRACK SHIFTER • DSL YARD CLEANER

NORDBERG MFG. CO., Milwaukee, Wis.

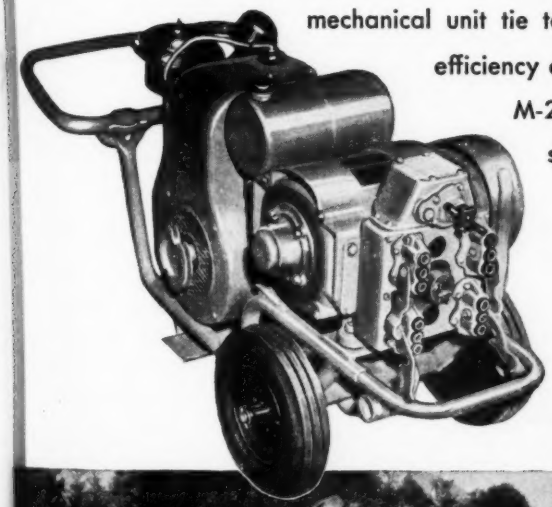
NORDBERG MACHINERY

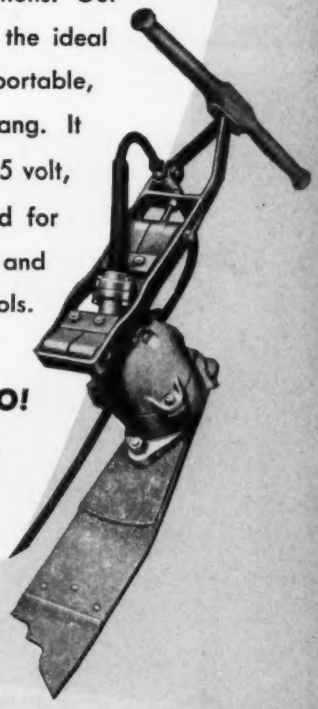
And DON'T OVERLOOK-FOR 1953 *the* GREATEST MULTIPLIER *of* SECTION GANG Productivity!



JACKSON UNIT TIE TAMPERS

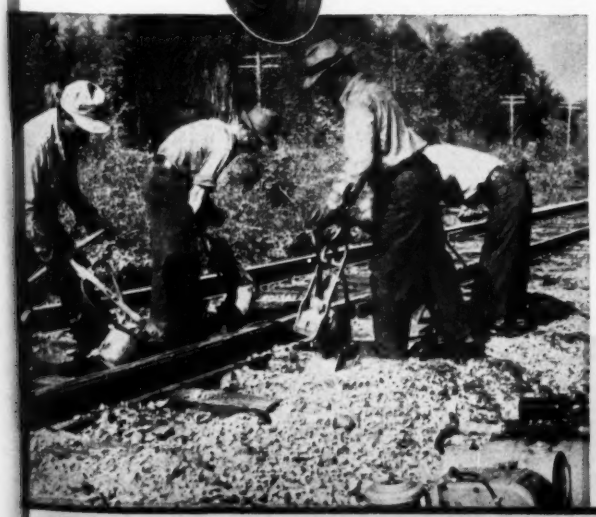
They are not only the fastest and most reliable machines of their kind, as demonstrated on the vast majority of leading railroads, but with their interchangeable blades, the only mechanical unit tie tampers that can be quickly adapted to handle at peak efficiency each and every job regardless of varying conditions. Our M-2 Power Plant and 2 to 4 tampers constitute the ideal section gang outfit. The Power Plant is easily portable, readily handled by even the smallest gang. It generates both single-phase and 3-phase 115 volt, 60 cycle, AC, and also may be used for lighting, emergency signaling and operating other portable tools.





THEY'RE IDEAL FOR . . . EXTRA GANG OPERATION, TOO!

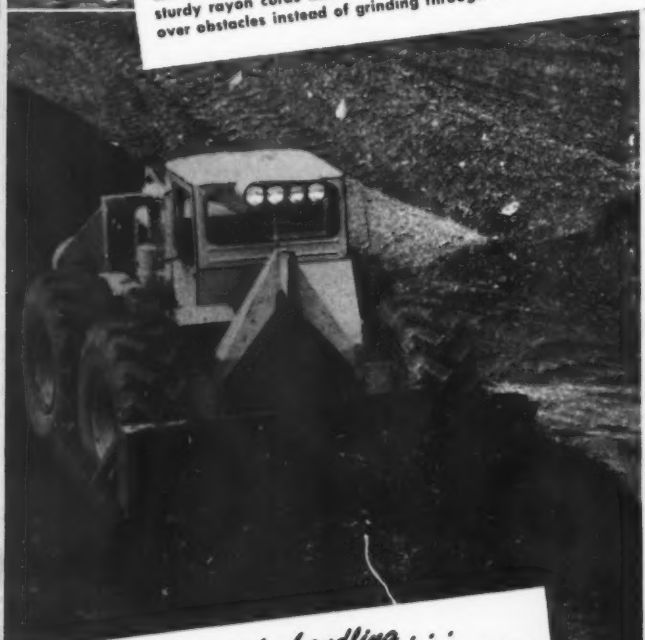
With JACKSON 4-Tamper outfits on your sections you are also well equipped for extra gang operations, for they may be grouped for any major ballasting job with results that are exceeded only by the JACKSON Multiple Tamper. Let us tell you more about them.



ELECTRIC TAMPER & EQUIPMENT COMPANY

All in a day's work for rubber-tired

Travels along or across tracks . . .
drives anywhere along right-of-way *without planking.* Flexible tires straddle rails . . . do not damage ballast . . . ride on ties without chamfering, thus saving maintenance. Tough tread lugs and sturdy rayon cords absorb shocks . . . tires easily flex, and roll over obstacles instead of grinding through them.



All-year materials handling . . .
On shuttle operations, Tournadozer stockpiles coal, sand, cinders, chemicals and other materials more economically than crawler dozers. With faster forward and reverse speeds, it can handle 2 to 3 times more yards per hour the year-'round. Husky, two-foot wide, low-pressure tires assure safe compaction of combustible materials without reducing them to fines.

In less than 4 minutes,

this highly mobile dozer travels a mile under its own power to handle any railroad maintenance job in your yard or along the right-of-way. Ready to run at a moment's notice, independent of trailer delays or expenses, rubber-tired Tournadozer can be driven via any surface to job at 19 m.p.h. And, it's ready to go to work right away!

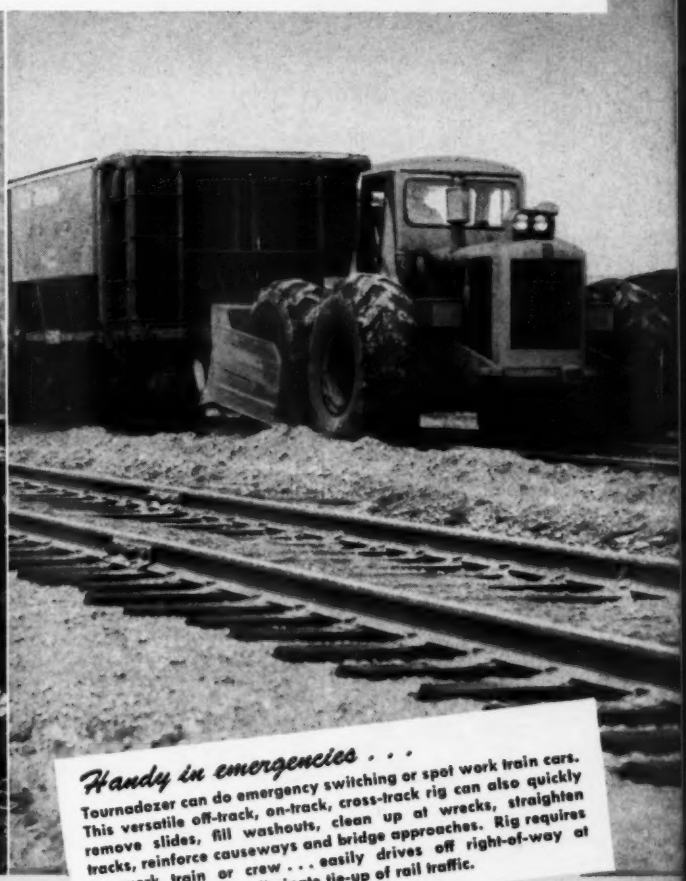
Crossing tracks and riding over ties without danger of chamfering, Tournadozer easily spreads cinders around your yard or roundhouse, highballs out to clean drainage ditches, remove slides, cut down banks, fill washouts, reinforce causeways or bridge approaches . . . one operator and one Tournadozer can do many of these and similar maintenance tasks *in a single day.*

Cuts dozing time in half

Tournadozer not only gets to jobs in less time . . . it also finishes them sooner. Rig moves fast in tough footings

railroad Tournadozer

Fast, simple operation . . .
Your regular maintenance-of-way crew can become competent operators in a short time. No complicated levers to "fight" . . . less end-of-day fatigue . . . fingertip controls, air-actuated and electric, give instantaneous power for all operations. With crawlers, it takes 6 motions and 10 seconds to shift gears . . . with Tournadozer, one easy motion lets you shift and GO.



Handy in emergencies . . .
Tournadozer can do emergency switching or spot work train cars. This versatile off-track, on-track, cross-track rig can also quickly remove slides, fill washouts, clean up at wrecks, straighten tracks, reinforce causeways and bridge approaches. Rig requires no work train or crew . . . easily drives off right-of-way at approach of train to eliminate tie-up of rail traffic.

with big 2½ yd. load . . . backs up fast for next pass. Four speeds forward to 19 m.p.h. and two speeds in reverse up to 8 m.p.h. help you complete each dozing cycle in about one-half the time it takes the average crawler.

No stopping to change gears

Instant gear changes with constant-mesh transmission plus torque converter (optional), and simplified operating controls put Tournadozer's constant power to work without loss of momentum. In addition, 186 h.p. four-wheel drive on 21.00 x 25 low-pressure tires means plenty of power and traction to hang on and move heavy loads even in toughest going. Down pressure now available on rig's big 2½-yard blade, helps get quick penetration in wet-frozen sand, clay, hardpan, etc. All these modern advantages contribute to more work done in all kinds of weather, every day of the year.

Tournadozer's 19 m.p.h. "run-about" mobility, its job proved work ability and its low operating upkeep make i the kind of tool you need for your maintenance task Compare it with dozing equipment being used in you division, and you'll see why major dirtmovers and indu trial and railroad officials, like yourself, are adding moder Tournadozers to their equipment fleets.

Get all the facts

R. G. LeTourneau, Inc., Peoria, Illino

☐ Send Bulletin with all facts on why Tournadozer gets more work done

☐ Would like demonstration on my division

Name_____ Title_____

Division _____

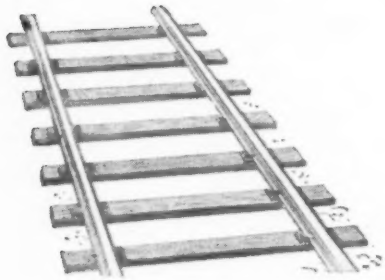
Railroad _____

Address _____

D-78-RR

LETOURNEAU

R. G. LeTOURNEAU, INC.



Now! Exclusively for Railroads!

GENERAL CHEMICAL'S

Rite-o-way* BRAND

TCA-CHLORATE

and other

Weed Control Chemicals

NO ONE CHEMICAL can be a "cure-all" for the widely varying weed problems encountered by railroads from coast to coast. That's why General Chemical has developed its *Rite-o-way Brand* of weed killer formulations especially for railroad use.

THIS GROUP OF weed control chemicals is the outgrowth of General Chemical's long experience and extensive background in handling individual railroad weed control problems. One of General Chemical's most recent developments is Rite-o-way TCA—CHLORATE. This product contains a special high-strength formulation of sodium trichloroacetate and sodium chlorate—a combination that is now widely recognized as the outstanding all-purpose weed control material.

LET US TELL YOU MORE about General's Rite-o-way Brand weed killers . . . and how General Chemical's proven weed control program has achieved outstanding results for leading roads. A confidential conference with a General Chemical weed control specialist will show you how to take full advantage of General's "customized" weed control program for 1953. For further information, write to the address below.

*General Chemical trade-mark

GENERAL CHEMICAL WEED CONTROL

Weed Killer Department

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Following are General Chemical's Rite-o-way Brand Weed Killers. One or more of these can provide the right combination to give outstanding weed control results for your road. Investigate today!

TCA-CHLORATE
Special High Strength Formulation

Contains a special high-strength formulation of sodium trichloroacetate and sodium chlorate, now widely recognized as the outstanding all-purpose weed control material. Provides maximum root control for perennial weeds and grasses. Most effective when applied in post-frost and pre-frost months (early spring and late fall). Mid-summer treatments may be used for control of annual growth and perennial seedlings.

FORMULA 7
(TCA, Acid in an Oil Base)

For general purpose grass control. Used with diluting oil and one of the additives listed for over-all control of weeds.

FORMULA 7
(with 2,4-D)

Combines maximum contact "knock-down" of heavy foliage and residual control of root crowns, providing long-lasting suppression of regrowth. Used with diluting oil where grasses predominate, but includes sufficient 2,4-D to control moderate infestations of broad-leafed weeds.

FORMULA 7 B-D

Used with diluting oil for control of very resistant weeds and grasses. The amount of 2,4-D has been increased and fortified by pentachlorophenol.

SODIUM TCA
(Liquid Concentrate)

For control of noxious grasses. For all-purpose weed control when used with sodium chlorate or one of the 2,4-D additives listed.

EMULSIBLE AROMATIC OIL

Low cost contact weed control for temporary clearance of seedling growth and as interim treatment between seasonal applications for perennial root control.

2,4-D AMINE ADDITIVE

Used simultaneously with Formula 7 or mixed with Sodium TCA for all-purpose weed and grass control.

2,4-D ESTER ADDITIVE

For use with Formula 7 where cotton or other plants susceptible to 2,4-D are not adjacent to treated area.

2,4-D—2,4,5-T ESTER
Brush Killer (Water Soluble)

Insurance against splitting of crossties

TERM OF POLICY:	For the life of the crosstie
FIRST COST:	7 cents per crosstie
ANNUAL COST:	None
METHOD:	Use Sharon anti-checking irons on every crosstie to prevent checking or splitting.

● Only by using anti-checking irons on every crosstie can you make sure that each tie will perform safely for its normal life.

Sharon crinkle-ribbed irons are designed so that the irons stay in place, despite vibration and severe service. In 15 years of operation on a leading Eastern railroad*, only one Sharon crinkeled iron vibrated loose.

Preventive measures are always better than corrective measures. You can insure your crossties for just 7 cents per tie, using two irons, or 12 cents per tie, using 4 irons. For safety and lower maintenance cost, specify Sharon anti-checking irons.

*Name of railroad on request.

Corrugations on Sharon crinkle-ribbed irons increase holding power approximately 25%. They can be driven at any time during seasoning without special tools or expensive equipment.

For booklet and/or samples, write Brainard Steel Division, Sharon Steel Corp., Department HH-1, Griswold Street, Warren, Ohio.

Brainard
SHARONSTEEL
STEEL DIVISION
SHARON STEEL CORPORATION

The new Pullman-Standard Power Ballast Cleaner and Winch Car team, the result of three years of field research and engineering, for the first time enables railroads to clean both track shoulders at once at a rate of 1000 to 1200 feet an hour with the labor complement of only four men. Both units have completely automatic controls located in their cabs. A triple-deck screen provides separate cleaning of large and small ballast, thus providing more thorough ballast cleaning and less loss of "fines." (Screen mesh sizes may be changed to meet specifications.) A rotary lift wheel carries the dirt from the screen discharge to the dirt conveyor. The 140° arc of the dirt conveyor is controlled from the cab, allowing distribution of the dirt into either an adjacent or following car or truck or on the berm of either shoulder, or beyond the drainage ditches.

Each of the revolving augers are self-inserting and bore into the ballast, break it up, and deliver the dirty ballast to chain buckets which then convey the ballast to a shaker screen for cleaning. The elevators and auger are operated hydraulically and can be raised or lowered independently. They will cut to any desired depth 8 to 10 inches below the tie base, depending upon the length of the tie.

Self-aligning plows, one in back of each auger, follow the irregularly protruding tie ends to undercut and extrude the hardened seal which fringes the tie base, thus performing an operation essential to good track drainage. The depth of these plows can be adjusted manually to meet local conditions. The cleaned ballast falls into place just in back of these plows as the Cleaner moves forward.

Simple preset distributing mechanism automatically puts the clean ballast back on the track in any location and in the proportionate amounts desired, thus requiring only two laborers to follow in rear of the machine to finish distribution and clear ties. **The Power Winch Car**—its 30,000 lbs. of pulling force enables the Cleaner to push through the most cemented ballast. It runs out ahead of the Cleaner, unwinding its cable and anchors itself in place with two, independent, self-aligning rail clamps, then winches in the cable. The clamps, designed not to slip on oily or peened rail, will function on rail of any gauge, type or condition of railhead without marking the rail. The 1000-foot, doubly looped ⅞" cable, with a breaking point of 60,000 lbs., is wound on a drum equipped with an automatic slip clutch that can be set from 0 to 30,000 lbs. so that it slips when obstacles are met. The cable can be unwound completely in 2 minutes and can be wound in at 600 to 5800 feet an hour.

SUBSIDIARY OF

ROAD & TRACK EQUIPMENT DIVISION **PULLMAN**

BIRMINGHAM • PITTSBURGH • NEW YORK • WASHINGTON • SAN FRANCISCO • **79 EAST ADAMS STREET**

Four men and new Power Cleaner

An operator for each machine and two laborers—this is all the manpower you need to clean ballast with the Power Ballast Cleaner and Winch Car team. But savings on labor are not all. You'll find that the work rate of 1000 to 1200 feet an hour will give even more savings because this versatile production team *cleans both shoulders simultaneously* to a depth of eight to ten inches below the tie base. Even in multiple track territory, the shoulder plus half the six foot are cleaned with just as few workers and at the same high production rate. On previously cribbed track, both crib and shoulder ballast of both shoulders are cleaned at 600 to 900 feet an hour, depending on how cemented the ballast is.

clean both track shoulders at once

Everything about this work team is designed to give you the highest production rate possible in the track time available. Set-up time takes only a few minutes once each work trick. Both units have powered, lateral set-offs and running speeds of 25 mph. in forward or reverse. Since each machine can run independently or tow the other, power failure in one will not tie up your track or delay traffic.

The Power Winch Car, developing up to 30,000 pounds of tractive force, assures effective operation even in the most cemented ballast, such as is found at grade crossings, and its exclusive rail clamping device, regardless of rail conditions, gives positive anchorage (without marking rail) with a full load on the cable.

at 1000 to 1200 feet an hour

You can prove to yourself on your own track just how this Power Ballast Cleaner team cuts labor costs, makes maximum use of track time without the use of "dead" track or work train, and gives you high quality production at low cost, by choosing one of these four ways: (1) rental for six months with option to buy and all rental payments applied to purchase price; (2) straight rental for six months; (3) deferred quarterly payments over a period of one to three years; (4) outright purchase.

When in Chicago, you are cordially invited to visit our Michigan Avenue Industrial Showrooms.

PULLMAN INCORPORATED

STANDARD CAR MANUFACTURING COMPANY

CHICAGO 3, ILL. • THE HOLDEN CO., LTD., MONCTON • MONTREAL • TORONTO • WINNIPEG • VANCOUVER

NEWS NOTES...

JANUARY, 1953

...a resumé of current events throughout the railroad world

More gas turbine locomotives—15 of them—have been ordered by the Union Pacific from the General Electric Company. Receipt of these units in 1954, will bring the UP's turbine fleet to 25 units.

•

Effective January 1 a union shop agreement with 13 non-operating railroad brotherhoods will become effective on the Chicago & North Western. The agreement is described as similar to that entered into by a number of major eastern roads last August. An agreement which is presumed to be similar has been signed by the Missouri-Kansas-Texas.

•

Ralph Budd, former president of the Burlington lines and now Chairman of the Chicago Transit Authority was expected to leave for Brazil shortly after the first of the year to head a group which will confer on proposed improvements in that country's railroad system. Among others, the group will include A. G. Reese who retired recently as district engineer maintenance of way on the Burlington at Galesburg, Ill.

•

Class I railroads in the first 10 months of 1952 had an estimated net income of $594,000,000, after interest and rentals, an increase of more than $100,000,000 over the same period of 1951, according to the Bureau of Railway Economics of the Association of American Railroads. Net railway operating income in the 10-month period totaled $853,008,994, compared with $732,823,912 in the first 10 months of 1951.

•

The average unit cost of treated ties laid in replacement during 1951 was $2.987, an increase of 127.7 per cent above the 1941 price of $1.312. Meanwhile, the average price per long ton of new rail laid in replacement rose 95.4 per cent—from $43.26 to $84.51. These figures are from the ICC's Bureau of Transport Economics and Statistics. Treated crossties laid in replacement during 1951 totaled 27,938,000; total cost $83,449,000. The comparable 1950 figures were 29,340,000 ties and $81,881,000. Rails laid in replacement in 1951 totaled 1,130,614 long tons; total cost $95,544,000. The comparable 1950 figures were 1,208,038 tons and $96,832,000.

•

The Seaboard Air Line expects to start construction within the next 30 days on a $7,000,000 hump-type classification yard at Hamlet, N. C. A diesel locomotive repair shop, costing approximately $1,500,000, will be constructed adjacent to the new yard. Completion is expected in 1954.

•

One of the largest railroad relocation projects ever completed in New York state was recently opened by the Erie at Corning, N. Y. The project, which cost about $12 million, involved construction of new passenger and freight stations, 7 miles of new line, and the erection of 21 major structures.

NEWS NOTES (continued)

Preliminary steps have been taken looking to the presentation of an extensive exhibition of manufacturers' products at the Coliseum, Chicago, on September 14-17, 1953, during the concurrent annual conventions of the Roadmasters and Maintenance of Way Association and the American Railway Bridge and Building Association. The exhibition will be sponsored jointly by the Track Supply Association and the Bridge and Building Supply Association. Applications for space were sent out to manufacturers early in January, setting March 1 as the date for the first allocation of space. Interested manufacturers should address requests for information to Lewis Thomas, director of exhibits, Room 705, 59 East Van Buren Street, Chicago 5.

•

Separation of freight and passenger traffic departments became effective on the New York Central on January 1. Also effective on that date were the appointments of Karl A. Borntrager to vice-president, operations and maintenance, and Frank J. Jerome to vice-president, engineering, development, research and real estate.

•

An ore movement record was set by the railroads in the period between the end of the steel strike and the close of Great Lakes navigation, according to the AAR's Car Service Division. By setting that record, the season's total ore shipments were put "over the top" of the 75-million-ton goal needed to stockpile steel mills for the winter.

•

Another link in the Western Pacific's centralized traffic control system was recently opened when CTC jurisdiction was extended eastward from Wendover, Utah, to Delle, about 70 miles. The project, now about 94 per cent complete, will ultimately cover the entire main line from Oakland, Cal., to Salt Lake City.

•

The New Haven is planning to install commercial television at New Haven, Conn. As the project is now planned, TV cameras will be placed at a number of remotely operated interlockings throughout New Haven terminal territory, with viewing screens in a centrally located tower, permitting the operator in that tower to see everything that happens at the distant interlockings. No definite date of installation has been set.

•

ALSO WORTH NOTING—A 105-kilometer (about 65-mile) stretch of electrified railroad, said to be the first in Central Africa, recently was placed in operation between Jadotville and Tenke in the Belgian Congo . . . The New York Central has ordered 11 Matisa tie-tamping machines from the Matisa Equipment Corporation at a reported cost of approximately $580,000 . . . Surveying has begun on a $4-million program to expand Union Pacific yard facilities in Kansas City. About 37,280 ft. of track will be added to present facilities . . . The Texas & Pacific is conducting tests with highway crossing signs using a red background and white lettering, both reflectorized. Tests follow road's success in using reflectorized slow boards . . . Four new trains—the Kansas City Zephyrs—will inaugurate new daily service on the Burlington between Chicago and Kansas City beginning February 1.

great northern R.R. GOES PAYLOADER®

Snow, gravel, dirt and rubbish get a fast heave-ho when Great Northern R.R.'s Model HM "PAYLOADERS" go into action. And these 1½ cu. yd. tractor-shovels can walk across tracks and go almost anywhere, thanks to their 4-wheel-drive, large pneumatic tires and proper weight distribution. They also have power-boosted steer, full hydraulic bucket control and four speeds in *both* directions — ranging from a slow, powerful crawl up to 20 miles per hour travel speed.

"PAYLOADERS" dig, grade, load, carry, backfill and spread dirt and bulk materials on right-of-way work . . . and make themselves valuable all year 'round at terminals, yards and stations. It will pay *you* to join the swing to " PAYLOADER" tractor-shovels. There are sizes to fit *your* requirements in the seven available models, and there are 200 "PAYLOADER" Distributors in the U.S. and Canada, with the finest of parts and service facilities to keep your "PAYLOADER" equipment profitably busy. The Frank G. Hough Co., 751 Sunnyside Ave., Libertyville, Ill.

IT'S A "ONE-MAN WORK TRAIN" — fast to the job... fast on the job

- Load, carry and spread ballast
- Maintain shoulders
- Fill bridge and culvert abutments
- Grade for track
- Handle coal at storage piles
- Cut drainage ditches
- Load ballast from stockpiles
- Clear slides and wash-ins
- Lay rip-rap
- Level station grounds
- Plow and load snow
- Handle rails, ties, supplies

write for FREE LITERATURE on the big 1½ cu. yd. 4-wheel drive "PAYLOADER" or any of the six smaller sizes.

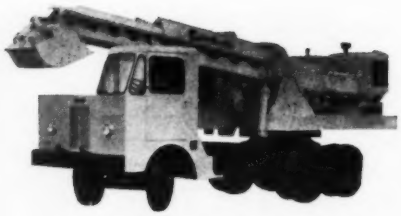
SAY "HUFF"

PAYLOADER®

THE FRANK G. HOUGH CO. • Since 1920

Machine with a reach!

THE MULTI-PURPOSE GRADALL



HERE's a particularly good example of a tough excavation made easy by the Gradall. On this job, hard-to-get-at clay had to be removed from beneath a roadbed to build a pedestrian underpass. Gradall's telescoping, *arm action* boom reached far in—often horizontally—digging close to piling, completing the job *fast* and with such precision that hand labor was practically eliminated.

Not all the jobs you'll find for the Gradall are as involved as this excavation. But any Gradall owner will tell you it's a "busy" machine—speeding completion and cutting costs on a wide variety of jobs such as ditch cleaning, clearing cinders from track and between ties, sloping and grading, widening cuts and fills, and restoring embankments. And from one job, it's ready to speed to the next, carrying its own interchangeable attachments for the work to be done.

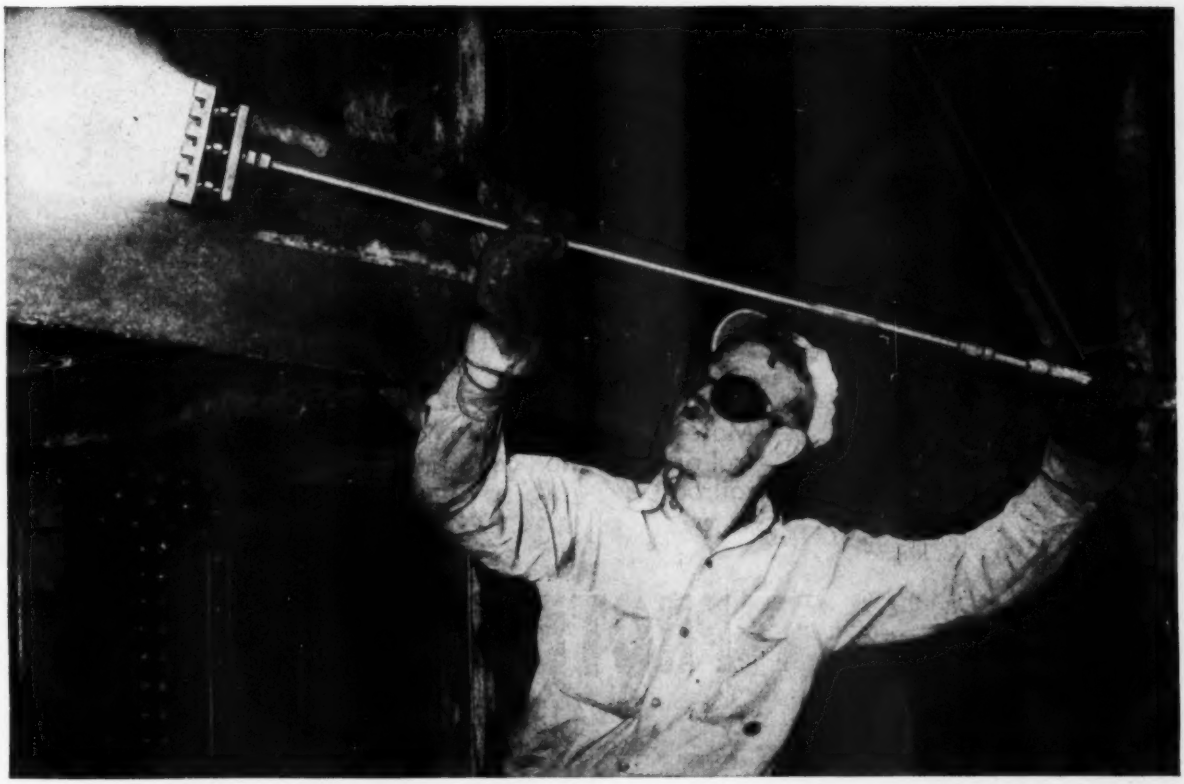
But see the Gradall in action—see how it can cut your off-track maintenance costs. Your nearest Gradall Distributor will be glad to arrange a field demonstration.

Gradall

DIVISION OF WARNER & SWASEY Cleveland PRECISION MACHINERY SINCE 1880

Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY



FLAME... for a "PAINT READY" SURFACE

AIRCO flame cleaning removes mill scale and crusted deposits *completely* – as only searing heat can do the job. Old paint and rust disappear... leaving the surface clean and moisture free – ready for immediate protective coating. The sooner you paint after flame cleaning, the better the job!

AIRCO provides a number of special-application flame cleaning tips. For structural steel... car sides and underframes... angle bar sections of rails... as well as special tip assemblies to prepare axles for magnetic particle inspection. All are readily adaptable to your present welding equipment.

AIRCO recommends the proper equipment... assists you in designing flame cleaning positioners and fixtures for special applications ... maintains a fully-staffed Railroad Technical Department to help you in the initial stages of any flame cleaning operation. Contact your nearest Airco office!

AIRCO

AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY
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REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
Divisions of Air Reduction Company, Incorporated
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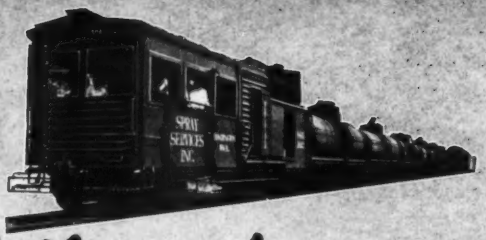
at the frontiers of progress you'll find

Complete Contract* Service for Your Railroad



WEED KILLERS

Materials combined to insure maximum control of vegetation conditions pertaining to your railroad.

PROTECTIVE RAIL SPRAYING

Providing equipment designed to spray protective coatings to rails and rail fastenings in **one** operation — capable of spraying through road crossings and special work as well as open track at a rate of 100 miles per day.

BRUSH KILLERS

Economically applied by specifically designed equipment for maximum coverage up to 100 feet each side of track resulting in positive brush control.

* ***Furnishing Equipment, Material and Trained Personnel***

CA • OILS • 2, 4-D

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BRUSH KILLERS

•

PROTECTIVE RAIL COATINGS

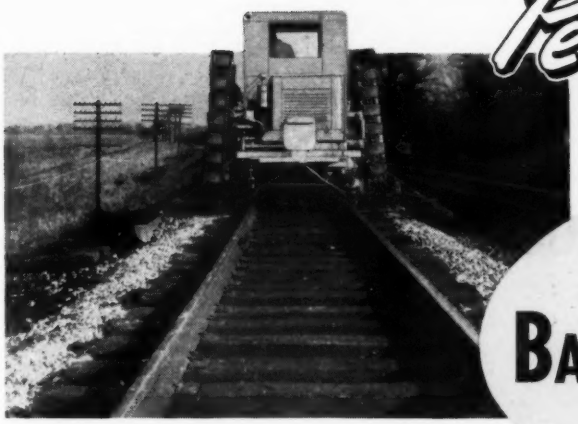
Spray Services *Incorporated*

Pioneers in Right-of-Way Spraying

P. O. BOX 5444 HUNTINGTON, W. VA.

NOW YOU CAN PLACE BALLAST IN *Perfect Position* FOR TAMPING!

McWILLIAMS BALLAST DISTRIBUTOR



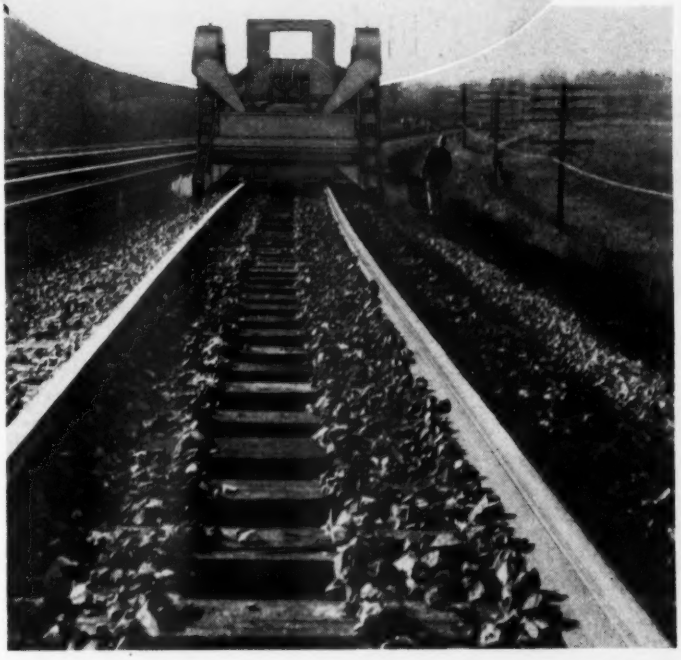
The track ahead of the unit is always empty for renewing and replacing ties.

An important new machine which distributes ballast for tamping faster, more efficiently, *more economically* than a crew of thirty men. Controlled by one man, this unit was designed as a companion piece to the McWilliams Tie Tamper, but it will speed and improve any tamping operation . . . either hand or mechanical.

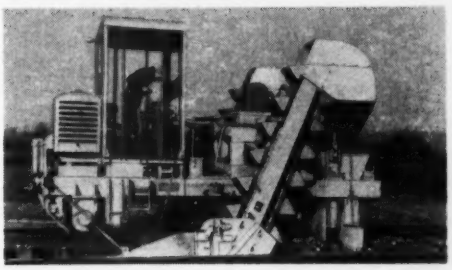
In operation, this machine picks up ballast from the intertrack space and shoulder, and deposits it behind the machine in the best possible position for tamping . . . both inside and outside the rail. It will handle any type of ballast for any desired track raise.

The experience of a major eastern railroad is typical of what this machine will do for you. In that application *it is saving the road up to $400 a day* by replacing a crew of thirty men . . . with additional savings from better tamping due to more uniform ballast distribution.

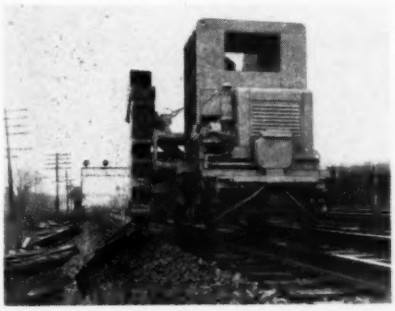
Write for Bulletin No. 101.



Self-powered machine distributes ballast at rate of 800 to 1000 feet per hour.



All operations of the McWilliams Ballast Distributor are controlled by one man.



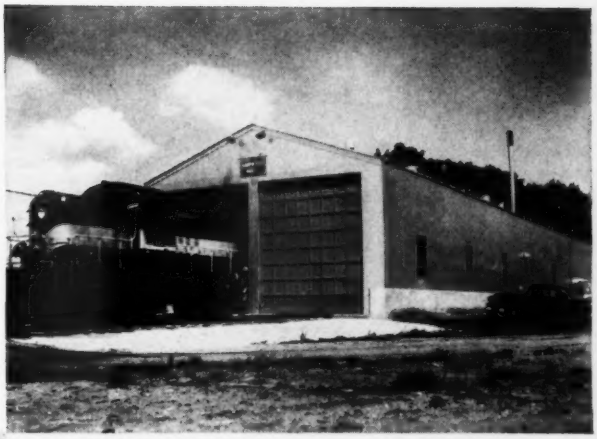
This versatile machine operates perfectly on either high or low shoulders.

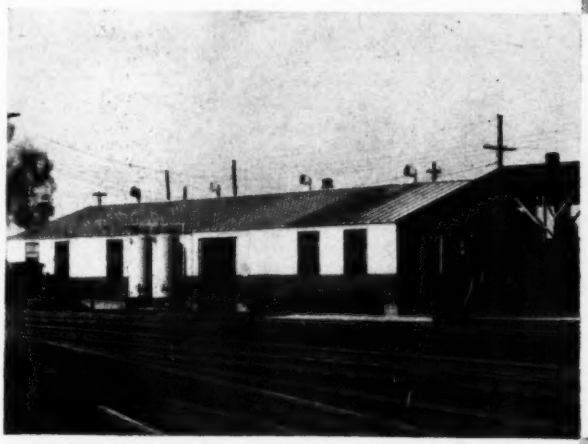
Railway Maintenance Corporation

PITTSBURGH 30, PA.

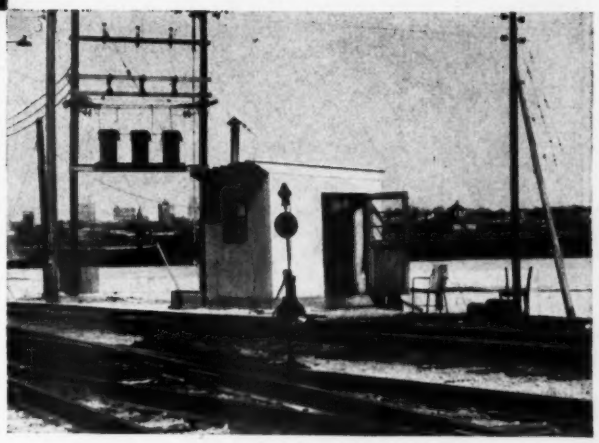
DESIGNERS AND MANUFACTURERS OF: McWILLIAMS MOLE AND SUPER MOLE . . . McWILLIAMS TIE TAMPER, CRIB CLEANER AND BALLAST DISTRIBUTOR . . . R. M. C. RAIL JOINT PACKING

These Buildings and Motors





have something in common



Think how simple it is to specify an electric motor to meet your specific needs. You can do the same thing with Armco Steel Buildings.

From a large warehouse or machine shop to a small utility building you select exactly what you need and you can specify one or a hundred with full assurance that they will be identical in construction, strength, durability and economy.

Armco Steel Buildings are available in a wide range of sizes with almost complete freedom in the placement of doors and windows. If desirable they can easily be rearranged, extended or moved to a new site. Sound engineering and precision manufacturing assure weather tightness, strength and durability. All-steel construction means utmost fire-resistance. Erection is easily and quickly done with your own crews.

Why not put these time- and money-saving advantages to work for you by specifying Armco Steel Buildings on that next job. Armco Drainage & Metal Products, Inc., 1083 Curtis Street, Middletown, Ohio.

SUBSIDIARY OF ARMCO STEEL CORPORATION

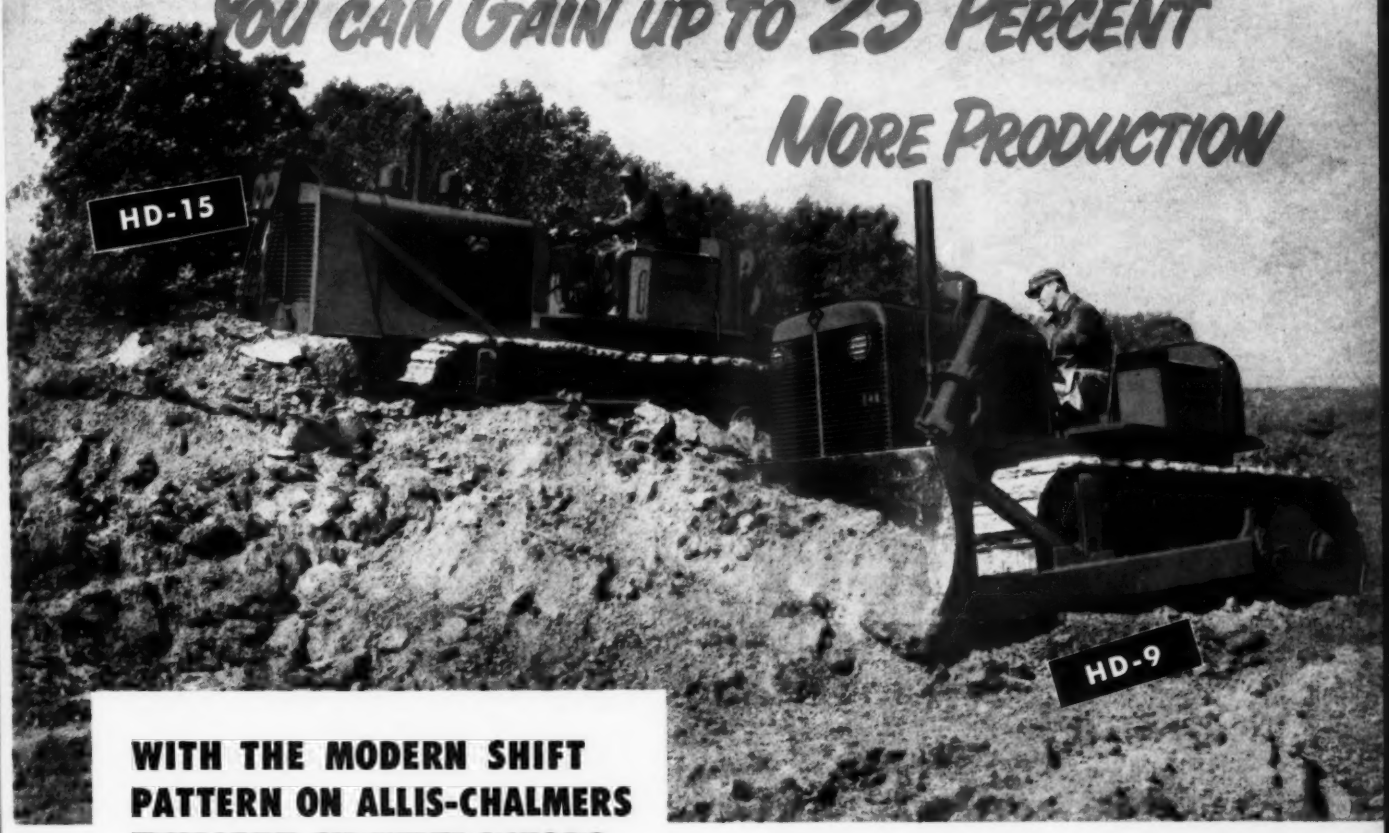
ARMCO STEEL BUILDINGS

ARMCO

Corrugated Metal Pipe and Pipe-Arch ★ Subdrainage Pipe
Retaining Walls ★ MULTI-PLATE Structures ★ Sheeting
Tunnel Liner ★ Pipe Piling and Pile Shells

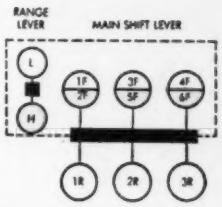
On saved shifting time alone

YOU CAN GAIN UP TO 25 PERCENT MORE PRODUCTION



WITH THE MODERN SHIFT PATTERN ON ALLIS-CHALMERS HD-9 AND HD-15 TRACTORS

It takes just half the time and effort to change from low forward to fast reverse with the Allis-Chalmers HD-9 and HD-15 transmission. This shifting time saved becomes production time gained on bulldozing and other jobs calling for a short forward-backward cycle. For example, job studies prove that on backfilling, pusher work, working around large excavators, digging and loading with front-end shovels — other jobs where frequent shifts are required — you can make five passes in the time usually required to make four... actually increase production up to 25 percent.



Here's how it works

You go from any forward to any reverse speed with one simple shift of the gear lever. The only time you touch the range lever is to select the forward range you want for the job to be done — just set it and forget it.

The constant-mesh Allis-Chalmers transmission makes shifting smooth and effortless . . . without gear clashing. And it's so easy that the operator can *always* take advantage of high-speed reverse.

This exclusive shift pattern, together with all-steel welded construction, unit assembly, 1,000-hour lubrication, are just a few of the reasons you get more work done with the new *designed-for-your-job* Allis-Chalmers tractors.

THE NEWEST, FINEST LINE ON EARTH!

HD-5
40 drawbar hp., 11,250 lb.

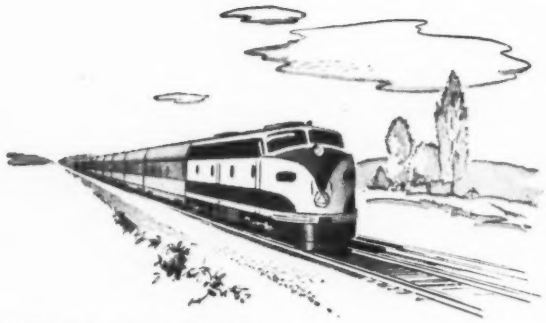
HD-9
72 drawbar hp., 18,800 lb.

HD-15
109 drawbar hp., 27,850 lb.

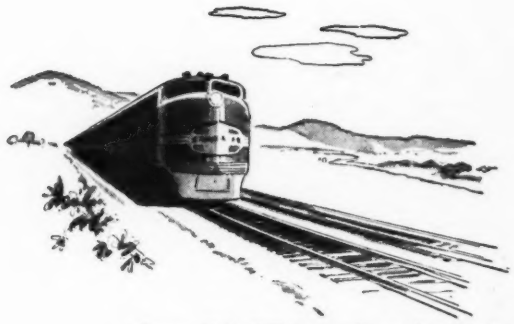
HD-20
Hydraulic torque Converter Drive, 175 net engine hp., 41,000 lb.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



Richmond, Fredericksburg & Potomac's crack diesel outside Richmond, Virginia.



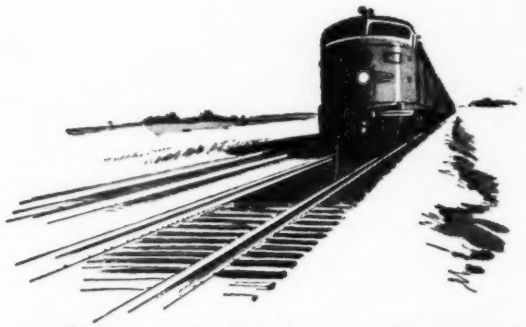
Santa Fe's "Chicagoan" eastbound between Cedar Point and Clements, Kansas.

Ribbonrail Service

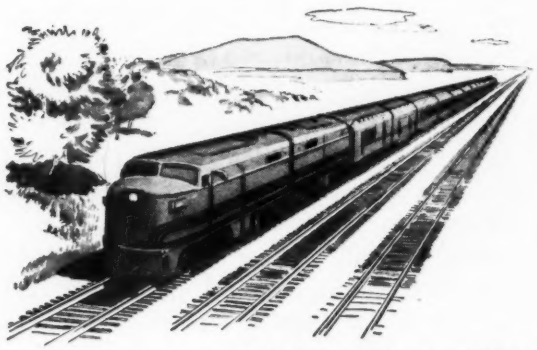
for open track high-speed traffic

Did you know that RIBBONRAIL Service is now producing miles of pressure-welded continuous rail for use in open main track? A few years ago continuous welded rail was used mostly in special locations such as bridges, station platforms, tunnels, and crossings. Cost-cutting performance of long rail in those locations prompted railroads to lay small "experimental" lengths in open track. These installations have proved their value. Now hundreds of miles of continuous rail — produced by RIBBONRAIL Service — are saving thousands of maintenance dollars for the railroads. Illustrated are just a few locations where RIBBONRAIL Service has made it possible for passenger and freight trains to glide smoothly over continuous rail many times a day.

Send for the booklet "Progress in Rail Pressure-Welding" for more information.



Chicago & North Western's "Gold Coast" between Missouri Valley and Council Bluffs, Iowa.



Lehigh Valley's "Black Diamond" at Royce, New Jersey.

—OXWELD RAILROAD SERVICE COMPANY—
A Division of Union Carbide and Carbon Corporation
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Carbide and Carbon Building Chicago and New York
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Canadian Railroad Service Company, Limited, Toronto

The term "Ribbonrail" is a service mark of Union Carbide and Carbon Corporation.

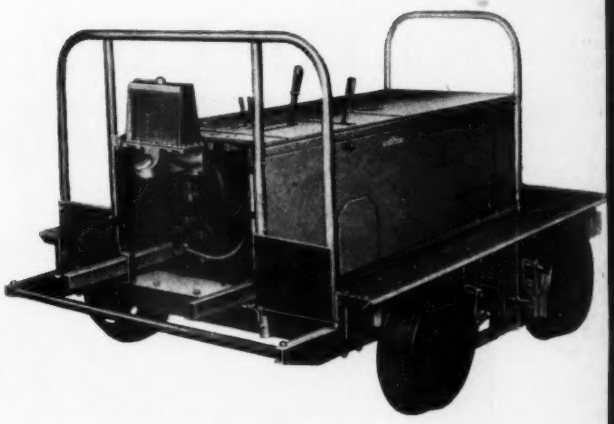
Ribbonrail
SERVICE MARK

FOR '53

IT'S THE MODEL 53

FAIRBANKS-MORSE

MOTOR CAR



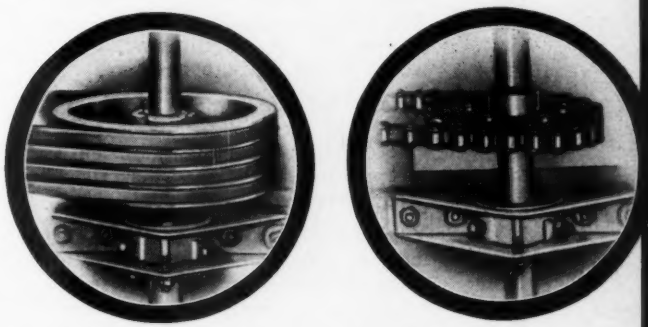
. . . the generous capacity standard section motor car that accommodates full crew and equipment, yet is light enough for a minimum crew to handle.

The Model 53 brings you all the performance proved features of F-M motor cars including:—low rear lifting weight—low center of gravity—sturdy steel frame—four-wheel brakes—rugged water cooled two-cycle engine. Dependability. Performance. Safety.

and now

YOUR CHOICE OF DRIVE

... Chain or V-Belt drive



The Model 53 has been redesigned so that you may have a choice of Chain Drive or V-Belt Drive—with the same basic motor car and the same clutch assembly.

Each drive brings you the many advantages of the Fairbanks-Morse air-cooled clutch that slipping will not harm. Continued slipping for starting and pulling heaviest loads cannot cause over-heating or damage. Clutch wear with either drive is minor and easily taken-up.

When you need dependable motor-car performance, call your Fairbanks-Morse railroad specialist. He can show you the model built to your standards. Fairbanks, Morse & Co., Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the best

RAIL CARS AND RAILROAD EQUIPMENT • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL

YOUR **EXTRA EMPLOYEE** THAT WORKS WITHOUT PAY

RACINE *Unit* TIE TAMPER

If you had an extra man working eight hours per day, you'd notice the increase in tamped track. A Racine Unit Tie Tamper provides that increase — GIVING YOU THE EQUIVALENT OF EIGHT HOURS MORE WORK EVERY DAY.

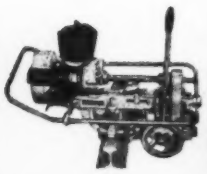
Racine Unit Tie Tampers speed up your work and increase manpower efficiency by reducing fatigue. Easily carried, easily operated, shock-free — they team up productively with your operators.

You get longer tool life with less machine maintenance, more uniformly compacted ballast that remains properly placed longer. All these are extras that make the Racine Unit Tie Tamper a valuable employee to serve you capably for a long, long time. Write for free 3-color catalog.

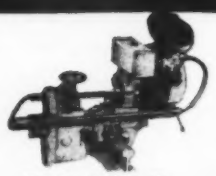
BUY DEFENSE BONDS

- *LIGHT IN WEIGHT (60 lbs.)*
- *SHOCK-FREE OPERATION*
- *1500 BLOWS PER MINUTE*
- *EASY STARTING MAGNETO IGNITION*
- *BALANCED RECOIL—SMOOTH ACTION*
- *LOW MAINTENANCE COST*
- *80% IMPROVEMENT IN TOOL LIFE*
- *LONG TROUBLE-FREE LIFE*

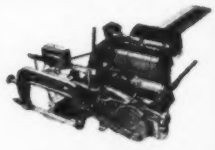
OTHER PORTABLE MACHINES BY RACINE



Racine Bond Drill



Racine Rail Drill



Racine Rail Cutter

RACINE

HYDRAULICS & MACHINERY, INC.

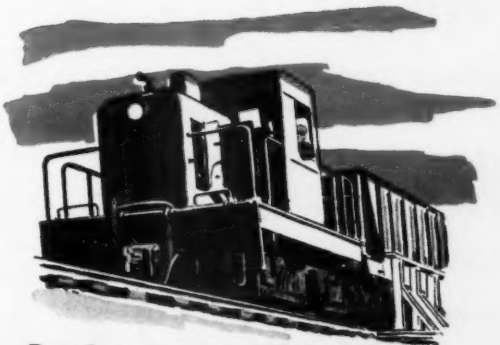
2038 Albert Street, Racine, Wis.

are engineered to make light work of tough jobs

Progressive, eyes-ahead engineering is one of the big reasons why so many railroad men pick Cummins Diesels for dependability.

Consider Cummins' exclusive system of fuel injection and metering—an important factor in the unequalled performance records established by lightweight, high-speed (60-660 h.p.) Cummins Diesels. No other Diesel fuel system is so simple . . . so rugged! It delivers a uniform, properly prepared fuel charge to every cylinder. All under low pressure—no chance of bursting and leaking fuel lines.

Your Cummins dealer will be glad to tell you more about the exclusive fuel system and other engineering advantages built into every Cummins Diesel. He is an expert who knows the requirements of your job. He heads up a specialized parts and service organization—equipped to handle all your diesel power needs. Call him today . . . or write!



***Leaders** in rugged, lightweight high-speed diesel power!*

CUMMINS

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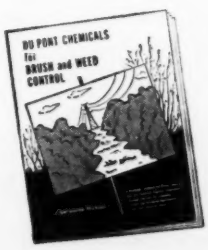

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No. 289 of a series

RAILWAY TRACK and STRUCTURES

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 WEST MONROE STREET
CHICAGO 3, ILL.

Subject: Our New Name

January 1, 1953

Dear Readers:

Doubtless you were surprised when you noticed the name on the front cover of your copy of "Maintenance" this month. Perhaps your first reaction was that you were getting a new publication. Actually, of course, it's not new; it has the same editors, is published by the same company, and none of the policies, editorial or otherwise, have been changed in any significant respect. But the new name is certainly a considerable departure from the former one, and I will endeavor to explain our reasons for making the change.

This step was the logical result of a growing feeling that the name Railway Engineering and Maintenance was subject to misinterpretation. This feeling applied to the words "engineering" and "maintenance." In our field we usually think of an engineer as being a civil engineer, but to the uninitiated this term can also apply to technically trained men in the mechanical, electrical, signaling or communications fields. Somewhat the same kind of confusion can result from the word "maintenance." To us, and our readers, a maintenance man is one who is concerned with the upkeep of the fixed properties. But to others this word can just as easily refer to the maintenance of locomotives and cars.

The name Railway Track and Structures has none of the disadvantages of the old one. At the same time it describes perfectly the character of the field covered by the magazine. The selection of the new name is, moreover, in line with a policy being carried out in Simmons-Boardman to rename its departmental magazines in accordance with the character of the fields covered rather than the functions of the men reading the publications. For instances, our paper in the mechanical field, formerly known as the Railway Mechanical and Electrical Engineer, effective January 1 became Railway Locomotives and Cars.

It is not without some regret that we record the passing of the name that this magazine carried since 1923. I am sure that many of our older readers will share this sentiment. To many persons, including this writer in particular, the old name had become an institution, for which we had come to have a warm sentimental attachment having a deeper significance than could possibly be engendered by the material considerations involved. But it is important to remember that everything the old name stood for — the concept of service to readers and advertisers — is still there and will continue to guide our efforts in the future.

Yours sincerely,

Merwin H. Dick

Editor

MHD:lw

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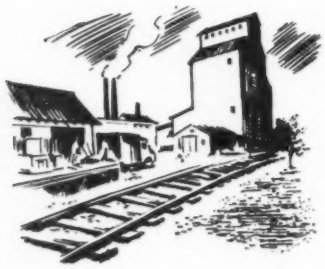

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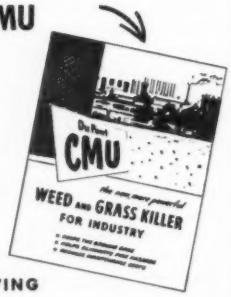

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RAILWAY TRACK and STRUCTURES

Editorial Comment

An Appraisal —

Of Factors Affecting the Railroads' Welfare

Just as some individuals have a habit of taking stock of their personal standing and prospects at the beginning of the year, it seems appropriate to do the same thing for the industry on which we depend for our livelihood. Such an evaluation of the railroad industry at this time is particularly in order because of a number of underlying developments on the favorable side. Some of the more important are as follows:

- Growing recognition in responsible quarters of the obstacles to railroad prosperity posed by outmoded and unrealistc regulatory policies. Several bills designed to rectify some of the basic inequities were introduced in Congress last year. They have not yet been passed, but the prospects of getting them enacted will be brighter in 1953.
- A youthful spirit of aggressive initiative that one sees in evidence everywhere on the railroads today. It is this spirit which is motivating railroad men to work tirelessly to obtain more equitable regulatory legislation, to reduce costs, and to get for the railroads their fair share of the total volume of traffic. Because of this resurgence of vitality there is not so much loose talk in some quarters about the railroads being a "decadent" industry.
- Maintenance of railway traffic and earnings at a relatively high level. Gross revenues in 1952 may have established an all-time high and the prospects were that net income would be greater than for any year during the last two decades, excepting the war years of 1942 and 1943. Economists are a bit cagey in making predictions for 1953, but at this writing there is no major swing in evidence in one direction or the other for 1952.
- The large property improvement programs that have been carried out in recent years, and which show no signs of abating. As a result, the railroads are in a better position now to handle traffic expeditiously and economically than ever before.
- The presence of a new administration in Washington, which is committed to the proposition of fostering and strengthening the free-enterprise system. It can confidently be expected that the socialistic planners will disappear from the scene and with them their policy of deliberately hamstringing private enterprise in order to pave the way for socialism. Simultaneously there will be a trend toward sound economic policies in the federal government, which will benefit the entire economy.

Any realistic appraisal of the railroads' prospects must also consider the less favorable aspects in the picture. Certainly such elements are present in sufficient force to preclude a feeling of unqualified optimism. Although public sentiment is veering in the direction of better treatment for the railroads, there has been very little actual progress to date. Subsidized forms of transportation are still carrying a great deal of business which the railroads, given equal treatment, are capable of moving more economically.

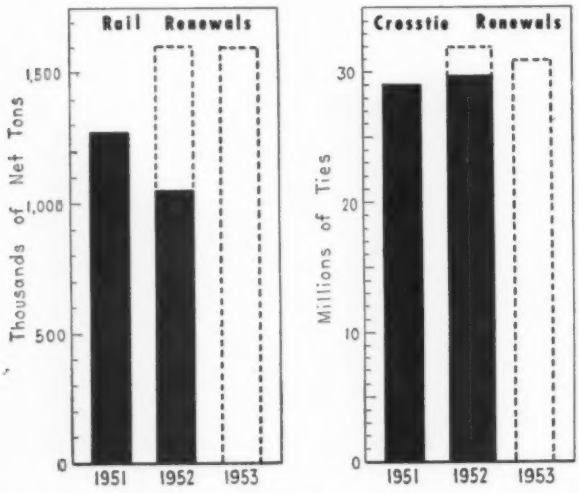
Then, too, although the dollar value of railroad earnings appears relatively satisfactory, these earnings are still inadequate in terms of the percentage return on the property investment. Finally, costs of operation are going up faster than freight rates or the ability of the railroads to introduce offsetting economies. For instance, while increases in wage rates are always made retroactive, requests of the railroads for higher rates to counteract them are never granted until after many months of delay.

On the basis of this appraisal there seems to be ample reason for a feeling of restrained optimism regarding the future of the railroads, both for the near term and the more distant future. Unfortunately this does not mean that there is any great change for the better impending in the problems confronting supervisory officers in the maintenance-of-way and structures department. In fact, by redoubling their efforts to promote efficiency and cut costs they can add considerable weight to the forces pushing the railroads toward a healthier position.

1952 IN REVIEW —

And a Glance at the Next 12 Months

THE MAINTENANCE-OF-WAY PICTURE FOR 1952 showed conflicting trends, none of which is difficult to understand. The major conflict is seen in the two principal indices of activity (rail and tie renewals), one of which was down and the other up. But the overall index of activity—the total expenditures for maintenance of way and structures—held at about the same level as in 1951. When allowance is made for the continued influence of inflationary factors, this would indicate that the total amount of work performed by the maintenance-of-way and structures forces in 1952 was probably a little bit below the previous year.



Two interesting points are brought out by these charts. One is the degree to which rail and tie-renewal programs for 1952 were affected by the steel strike and other adverse factors. The dashed-line portion of the middle bar in each chart indicates the total renewals planned by the Class I roads at the beginning of the year, as estimated on the basis of figures furnished by nearly all of these roads. The shaded portion indicates the actual renewals as estimated on the same basis. The other interesting point is the relatively larger programs being planned for 1953.

Based on figures submitted to this magazine by most of the larger roads of the country it is estimated that the Class I railroads as a whole laid 1,050,000 net tons of new rail for replacement purposes last year. This represented a drop of 216,300 tons, or 17.1 per cent, compared with 1951, and brings rail renewals to the lowest level since 1939. The fact that this decline occurred in the face of strong evidence that the roads were planning larger rail programs, and had the wherewithal to carry them out, is explained by the strike of steel workers, which closed the steel mills and stopped rail deliveries for almost two months.

Tie renewals fared somewhat better. It is estimated, on the basis of figures obtained from most of the larger roads, that the Class I railroads inserted a total of 29,500,000 crossties for replacement purposes last year, an increase of 438,440 ties, or 1.5 per cent, compared with the official figure for 1951. However, since tie insertions in the latter year were the lowest on record, the small gain in 1952 still leaves them at a very low level, but there is good reason to believe that they would have been moderately higher if it had not been for the fact that some cut-backs in maintenance programs were put into effect because of several adverse factors.

Regardless of what happened to rail and tie renewals last year, the total expenditures for maintenance of way and structures showed practically no change. Using official figures for the first nine months of the year as a basis, it is estimated that the Class I roads spent a total of $1,500 million for this purpose for the full year. This was virtually the same as for 1951 when a new all-time high record was established. What this means is that the forced cut in expenditures for laying rail was counteracted by the increase in tie renewals and perhaps other categories of work, and by higher costs for labor and materials.

But now that 1952 is "water over the dam," what about the year that lies ahead? To secure at least a partial answer to this question figures were obtained from nearly all of the larger railroads on the extent of their contemplated programs for rail and tie renewals. Estimates based on these figures indicate that the Class I roads are planning to lay a total of 1,600,000 net tons of new rail, an increase of 550,000 tons, or 52 per cent, compared with 1952. Tie renewals are estimated to total 31,000,000, an increase of 1,500,000, or 5.1 per cent. There is little question but what the roads will be able to obtain the ties necessary to carry out their projected programs for 1953, but the availability of the necessary new steel will depend to a large extent on the international situation.

Whether, in any year, maintenance men are able to obtain the required amounts of ties, or rails or other materials, or the money to acquire and apply such materials, is a matter over which they have relatively little control. The one phase of maintenance activity in which they do have some degree of control is that of costs, and the figures indicate that much remains to be done here before it can be said that satisfactory control has been achieved.

ANNUAL INDEX —

How to Obtain Your Copy

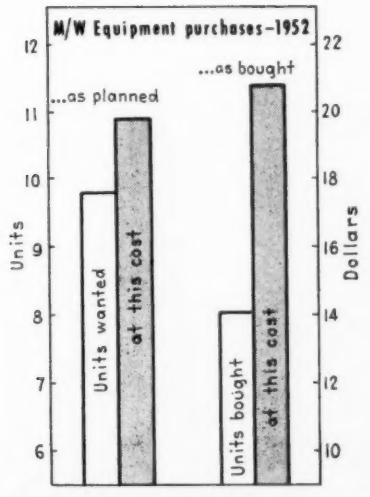
THE INDEX OF all material published in this magazine during 1952 will soon be ready. Those who have requested copies of the annual index in previous years will automatically have one mailed to them this year. If you have not requested a copy of the index in any prior year, but desire to have a copy of the 1952 index, all you need to do is fill out and mail the coupon included on page 39 of this issue.

TRACK cleaning machines are a fairly recent development.

UTILITY of this motor grader made owner want additional units.

Value of Machines Bought Soars to New High in 1952

Railways reported that they spent an estimated $20,700,000 for 8000 units of M/W work equipment and roadway machines. Many roads expect to spend even more this year than they did last.



MORE MONEY was spent last year but fewer units were purchased. Railways planned to buy more, but were caught in web of higher costs and larger units.

• Conflicting factors having influence on the purchase of maintenance of way machines converged during the past year to create a seemingly inconsistent result—fewer units purchased but more money spent. After budgets had been approved early last year, it was known that the railways would spend more money for economical work-saving machines during 1952 than they had spent the year before. Had the pattern of former years continued from that time throughout 1952, the number of units purchased by the year's end would undoubtedly have been higher than the number bought the year before. Under those circumstances a large volume—about 10,000 units—of machines costing an average of about $2,000 apiece would have been purchased.

However, having learned, either at first hand, or from others, of the economies inherent in the larger, but more expensive, units of equipment which give a high production of long-lasting work, nearly 20 per cent of the roads in the United States decided apparently, to purchase a relatively small number of these larger units. The purchase of these larger machines in the quantities reported at year end raised the average cost of machines bought from a figure slightly more than $2,000 per unit to an average cost in excess of $2,500.

With budget ceilings already established, these higher average costs per unit permitted the purchase of fewer total units. Other deterring influences, such as the prolonged steel strike and its effect on the amount of available rail (as well as steel for work equipment) and on railway net income, also reduced the final volume of purchases. All these factors combined to lower total purchases to 8,000 units, but to raise their value to a new high.

This gross figure, representing the number of units of work equipment purchased in 1952, is an estimate based on answers to a questionnaire

MOTOR CARS kept first place ranking despite fewer units.

sent to all the railways in North America. Replies were received from about 78 per cent of the roads including all but a few of the larger ones. Of the roads submitting replies in 1952, 172 reported purchasing 7,660 units. This compares with 9,622 units reported as purchased by 176 roads in 1951. Of the Class I railroads reporting, 37 acquired more units of equipment last year than in 1951, five obtained the same amount, and 59 reported fewer purchases.

More May Be Spent This Year

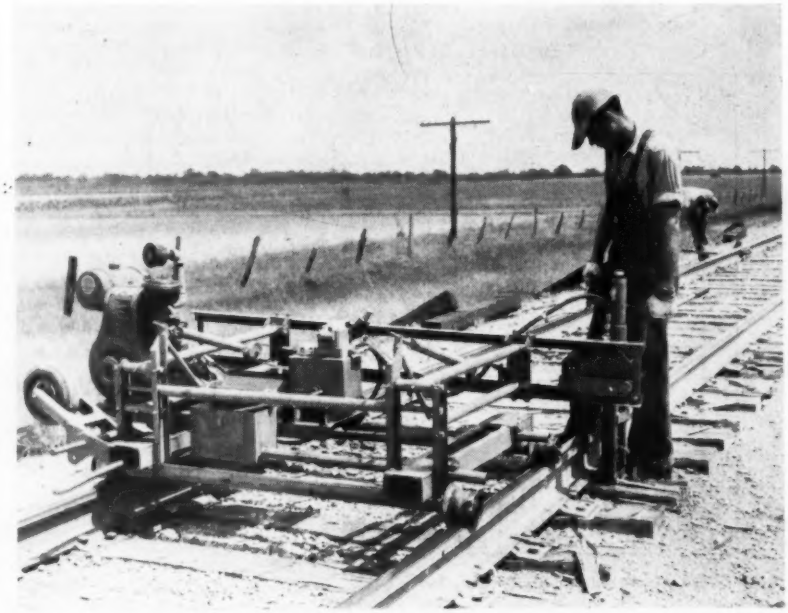
Many roads have already established their programs of work equipment purchases for 1953. Seventy-two of these railroads have provided this magazine with dollar estimates of the amount of equipment they plan to buy. Of these roads, 37 expect to spend a total of $5,061,325 in 1953, whereas they spent only $3,444,942 in 1952. On the other hand, 33 roads which spent $2,904,890 in 1952, plan to spend only $2,001,055 in 1953. Two roads which spent $82,000 between them last year will spend the same amount this year. Specifically, the planned purchases of these 72 roads as a group will amount to $7,144,380. This total is especially significant when it is noted that 109 roads giving specific figures for their 1952 purchases reported spending $10,409,450. On this basis total purchases this year should be as high, if not higher, than in 1952.

As was the case in 1951, more equipment was bought in 1952 for transporting men and material than for any other purpose. In fact, of the classified purchases reported exclusively to this magazine, almost half of them—3,126 units—were for this purpose. Of these, 1,728 were bought for operation on tracks, 1,593 were secured for off-track use and the remainder could be used for either purpose. Among the first group, both motor cars as well as push cars and trailers declined somewhat in comparison with the number purchased in 1951. The 1,354 motor cars bought compares with 2,012 acquired in 1951 and 1,229 purchased in 1950. The 374 push cars and trailers purchased compares with 553 bought in 1951 and 602 in 1950. For the first time in several years, believe it or not, no hand cars were reported purchased in 1952.

Highway Vehicles Drop Too

Although the number of highway vehicles purchased in 1952 did not equal the record purchases of 1951, they were higher than in any other year prior to that. Specifically, these purchases included 249 automobiles, 1,081 trucks, and 63 highway trailers, for a total of 1,393 units. In 1951 the record number purchased by the reporting railroads included 283 automobiles, 1,113 trucks and 30 trailers, for a total of 1,426 units. The previous high total, purchased in 1950, included 198 automobiles, 889 trucks, and 68 trailers for an aggregate of 1,157 units.

With on and off-track vehicles, as a group, clinching their usual first place ranking despite fewer purchases, equipment for carrying out ballasting programs, although it was purchased in almost as great quantities as in 1951, had to be content with second place. In a year of declining over-all purchases, it is significant that the equipment in this category remained steady. This is undoubtedly the result, to some



SPIKE PULLER of new type helped to pull purchases up.

extent at least, of slightly increased tie-renewal programs and the fact that ballast and surfacing programs, in themselves, generally remain on a normal or "cycle" basis. A total of 1,347 machines were purchased in this category in 1952, compared with 1,365 in 1951 and 1,343 in 1950. Pneumatic tamping outfits declined from 389 purchased in 1951 to 311 in 1952, and electric tampers dropped from 244 in 1951 to 187 last year. On-track, production-type tampers, as a group, were purchased in about the same quantities as the year before. Altogether 55 units of this type of tamping equipment were reported purchased last year compared to 57 units the year before. Other reported purchases included 640 tamping tools, 34 power jacks, and 38 ballast diskers or regulators.

Less Rail-Laying Equipment

Probably the most depressing influence on the number of roadway machines and power tools bought by the railroads during 1952 was the steel strike which had a two-edged effect. On the one hand it reduced the tonnage of new rail made available for laying and, on the other, it lowered gross revenues enough to delay the placing of orders for equipment. In some cases it might even have delayed the filling of orders previously placed. Caught between these bad influences, rail-laying equipment could not possibly hold its own. As a result, a total of only 812 units of this type of equipment were reported purchased in 1952. This compares with 1,010 units purchased in 1951 and 713 bought in 1950. As would generally be expected, most of the different types of equipment used in this category shared in the general decrease. These units included adzing machines, bolting machines, cribbing machines, spike drivers, power rail layers, rail drills, and rail saws. On the other hand, slight increases were noted in the purchase of rail cranes and spike pullers—the latter probably due to the recent introduction of a new type of machine.

Following the usual pattern, grading equipment ranked next in total volume purchased by the recording railroads. Like most other categories, this group of equipment was purchased in smaller quantities than the year before. This was partially due, undoubtedly, to the fact that the number of units bought in 1951 were more than double the number purchased in the previous year, and almost three times the number of units bought in 1949. Despite this, the 421 units purchased in 1952, although less than the 653 bought in 1951, were well above the 303 purchased in 1950. Two classes of equipment in this category, however, were purchased in greater quantities last year than the year before—28 draglines being bought in comparison to 18, and 13 motor graders compared with 7 in 1952.

Demand for cranes, although not actually reflected in larger purchases, probably remained more nearly steady than any other category of equipment on which reports were received. In fact only one less crane was bought in 1952 than in 1951. In spite of this very slight decline, more rail-handling cranes, also reported under rail-laying equipment, were purchased in 1952 than in the previous year. This was also true of the purchase of highway cranes, of which 28 were reported as being bought last year in comparison with 12 in 1951. For the purpose of analysis, draglines and shovels are included in the grading equipment category mentioned above.

All tie-tamping outfits reported as purchased in 1952 include the power plants necessary for their operation. However, the railroads also reported purchasing last year 200 additional power-plant units, either as replacements or to supply power for the operation of various tools used in bridge and building work. These units included 97 air compressors and 103 generators. These compare with 129 air compressors and 119 generators bought in 1951. Motor-car engines, sometimes included in this category, were purchased in considerably greater quantities in 1952 than the year before, but fewer were bought than in 1950. These purchases included 105 units in 1952, 42 in 1951, and 135 in 1950.

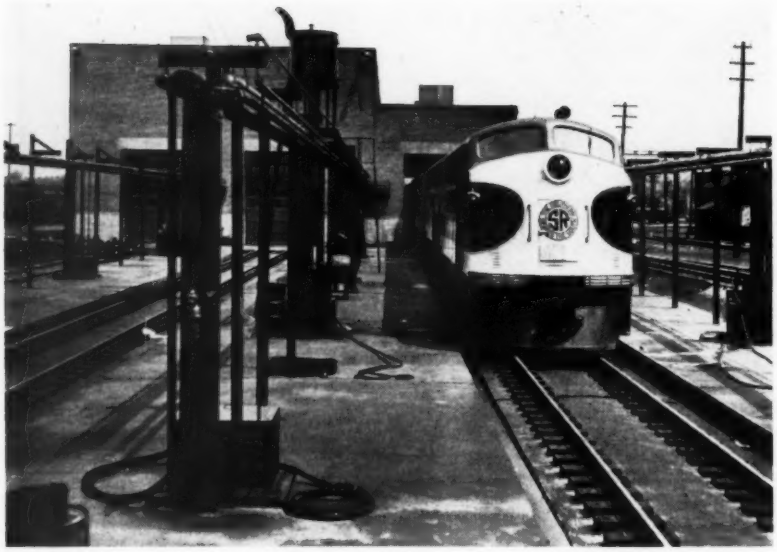
Purchases of welding units, which jumped from 48 in 1950 to 78 units in 1951, continued to increase, but not quite so much, to 87 units in 1952. Finally, 1,239 miscellaneous machines were reported purchased in 1952 compared with about the same number in 1951.

More Equipment Rented

The practice of renting certain classes of equipment, such as ballast cleaners and grading units, has been going on for years. However, an apparent increase in the rental of other types of equipment has been noted especially since wage rates reached a point where it became economical for small roads to rent machines rather than complete their small programs by hand. The extent to which this practice is prevalent can be seen from the fact that a total of 31 roads, many of them small lines, reported the renting of 24 classes of equipment varying from ballast cleaners and pile drivers to on-track tamping machines welders, concrete mixers, cribbing machines, truck cranes, air compressors, weed burners, road rollers, and many types of grading equipment.

TRUCKS, some with useful attachments, ranked second again.

ALL PICTURES on this page represent good examples of fire prevention methods. Good maintenance is essential.



MODERN TERMINALS can be built and maintained so that hazards are controlled as far as practicable. Note the concrete apron, even in the track space, and the very good housekeeping practiced at this diesel shop on the Southern at Alexandria, Va.

GOOD DIKES are also important. They don't have to be made of concrete like this, but it does decrease upkeep.

EXPLOSION-PROOF electrical facilities have been installed in this small wayside diesel fueling pumphouse.

Eliminate FIRE HAZARDS or . . .

Fueling Facilities May Go

To scotch the belief, held in some quarters, that there is little fire hazard in handling diesel fuel oil, the author cites many reasons why the contrary is true. He commends those railway officers who treat fuel oil with the respect warranted by its danger and, upon weight of his evidence, requests those who do not to reconsider their stands.

By W. S. Wicker
Chief Engineer, Transportation
Mutual Insurance Company,
Philadelphia, Pa.

• The necessity for installing explosion-proof wiring and equipment and vapor-tight globes in fuel-oil pumphouses has been given considerable study by railroad fire-prevention men and insurance underwriters since the introduction of the diesel locomotive on American railroads. There have developed almost as many ideas about the hazards of handling fuel oil as there are men interested in the matter. After thorough study many railroad fire-prevention engineers and practically all of the engineers for the underwriters have reached the conclusion that there is sufficient hazard in diesel fueling to justify the installation of explosion-proof electrical equipment and fittings to eliminate the possibility of fire.

This material was submitted originally as a discussion for the What's the Answer department, but because of its comprehensive nature it was withheld for use as a feature article.

Reasoning Justified

This contention is supported by the following definitions contained in the National Fire Codes, Vol. 1, 1951, page 13:

"Flammable liquid" shall mean any liquid having a flash point below 200 deg. F. and having a vapor pressure not exceeding 40 p.s.i. (absolute). Flammable liquids shall be divided into three classes as follows: Class I shall include those

CRUSHED-ROCK platforms are hazardous because they become saturated with oil if appreciable leakage develops. An expensive "flash" fire occurred at a location similar to this when a lighted cigarette was tossed among stones which had become oil-soaked.

COVERED TROUGHS for storing hose have not proved satisfactory because they often fill with fuel oil and water.

Up in Smoke

having flash points below 20 deg. F.; Class II shall include those having flash points above 20 deg. F. but at or below 70 deg. F.; and Class III shall include those having flash points above 70 deg. F.

The volatility of flammable liquids is increased when artificially heated to temperatures equal to or higher than their flash points. When so heated Class II and Class III (liquids) shall be subject to the applicable requirements for Class I or Class II liquids. This regulation may also be applied to high-flash-point liquids which otherwise would be outside its scope when they are so heated.

Most of the controversy, where there is any, about the hazards involved in the handling and use of diesel fuel oil stems from various interpretations of this last paragraph. Diesel fuel oil, having a flash point above 70 deg. F., is essentially a Class III liquid. However, it is frequently subject to natural or artificial temperatures high enough for vaporization to occur. In view of the quotations from the National Fire Codes, this would reduce the classification of diesel fuel oil and thereby require greater fire protection in its handling. Fires have occurred in many instances because of failure to accept these requirements.

Support for reducing the classification of diesel fuel oil has been increasing steadily for a number of years. The excerpts given below from various sources bear repetition because they typify this growing belief that there are definite fire hazards in handling diesel fuel oil. For instance one group of underwriters recommends explosion-proof installations in diesel-fuel pumphouses in an article reading in part as follows:

The National Board of Fire Underwriters has definite detailed standards on oil installations. It is quite difficult, however, to pick from all their publications the recommended safe practices and regulations which apply to the various features of diesel-locomotive fueling, servicing and repairing. In as much as there appears to be need for gathering data into a more concise form as to fire prevention and protection in connection with each process involved, the following recommended safe practice is presented in connection with fueling diesel locomotives: Pumps for filling tanks and discharging from them should be of a design approved by the National Board of Fire Underwriters. Electric motors and all fittings should be of the explosion-proof type."

An article in *Railway Engineering and Maintenance*, November, 1948, reporting a study made by the American Railway Bridge and Building Association, states: "All insurance-company engineers insist that there are fire hazards in varying degree in connection with the handling of diesel fuel oil from the time it is received on the unloading track until it is delivered into the tanks of locomotives. The chief engineer of one insurance company doing a large railway business recommends that fuel-oil pumphouses should be of fire-resistive construction and be provided with explosion-proof electrical installations."

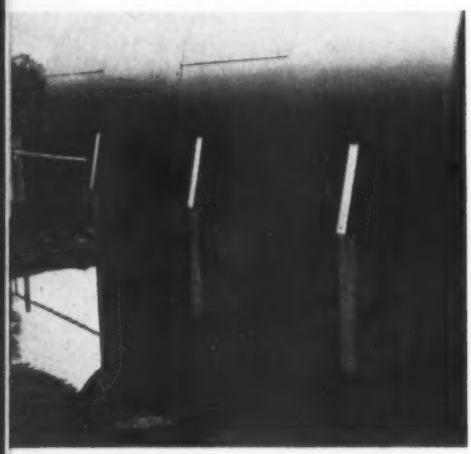
An engineer of one of the large railroads writing in the *Railway Age*, August 9, 1941, said: "Pumps and tracks should be thoroughly insulated to prevent any sparking." Many other articles in *Railway Age* have reported on the safety measures already taken by some roads. One of these articles contained this statement: "Mobile fueling units have Pyle-National vapor-tight fixtures in the cab." Another describes diesel servicing facilities which include 200-g.p.m. pumps in fuel-oil pumphouses, and explosion-proof motors and electrical connections in oil-storage rooms and under concrete servicing platforms within the diesel-shop buildings.

Spilled Oil a Definite Hazard

There are also fire hazards involved in connection with oil-saturated premises around diesel-fueling stations. Oil spilled on the ground at fueling stations and unloading tracks adds materially to the fire hazard, evidenced by serious fires which have resulted from the careless handling of cigarettes, matches and open lights near spilled fuel oil. One flash over a

UNPROTECTED steel supports for diesel fuel-oil storage tanks are hazardous. A fire in adjacent debris could generate enough heat to buckle the supports.

ONE HAZARD spoils this otherwise good example. The tank is well diked and rests on fire-resistant supports, but there's too much grass. A fire might start some distance away and yet imperil this tank installation.



UNDERWRITERS recommend that all dikes be built with drain pipes having valves that can be opened for drainage.

INEFFECTIVE DIKES like this give only superficial protection and invite fires that might possibly spread quite rapidly.

considerable area was caused by a switchman's lantern but fortunately no diesel locomotives were being refueled at the time and no damage was done. If passenger diesels had been at the fueling station the results could have been serious, for passengers frequently watch the diesel locomotive fueling process.

It is because of this vapor hazard that insurance companies suggest that explosion-proof electrical installations be provided and that *smoking* and *open lights* be prohibited in the vicinity of diesel fueling stations. Sparks from non-explosion-proof motor brushes or from other electrical installations not designed for use in gaseous atmospheres could also readily start such fires. Only last year, a flash fire in the vicinity of diesel fueling facilities was started by the steam engine of a passing local freight. If such a flash fire should happen when diesel locomotives are being refueled there is the high probability of fire damage to equipment. Similar fires could readily be started by static sparks, sparks from stray currents or friction sparks.

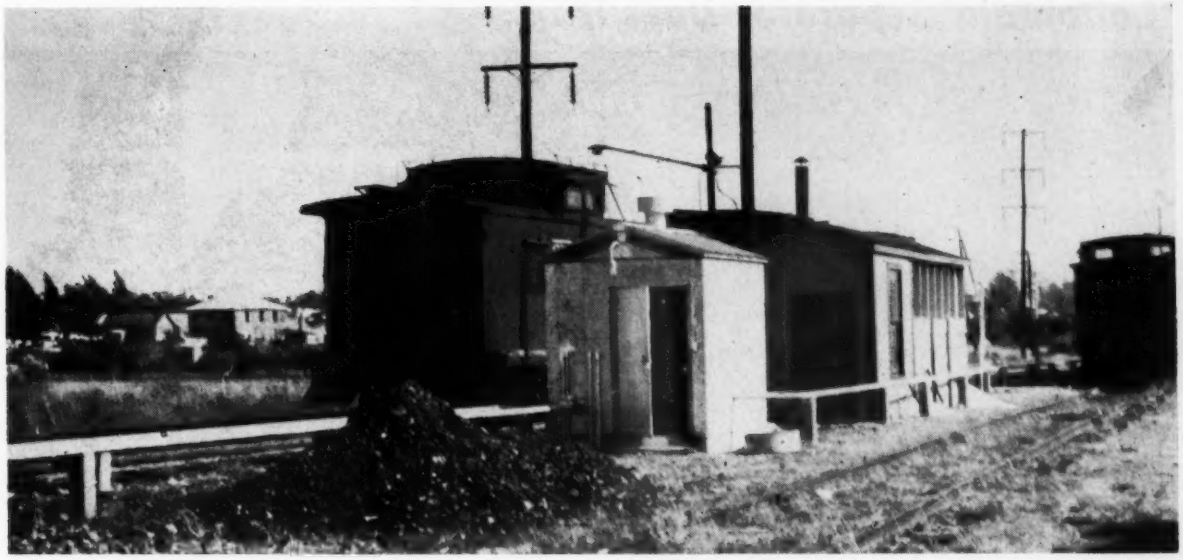
Use Non-Ferrous Connections

It is to overcome possible friction sparks that non-ferrous nozzle tips and connections are required for fueling diesel locomotives as well as at gasoline-handling facilities. Non-ferrous loading and unloading connections are also required. Companies which are meticulous in their attention to detail in connection with controllable conditions from which fires can start, install explosion-proof electrical equipment and fixtures in gasoline and diesel fuel-oil pumphouses, and also insulate, bond, cross-bond and ground unloading tracks. They also ground oil-storage tanks. The necessity of such bonding and grounding should be considered in connection with the safeguarding of diesel fueling stations.

Complete Bonding Stressed

There is no question about the hazards involved at gasoline unloading stations. Under certain conditions, when vaporization occurs, similar hazards also exist at diesel fueling stations. For that reason the precautions taken in the one instance are also recommended for the other. Thus, the following words of caution issued in a News Letter of the Fire Protection and Insurance Section of the Association of American Railroads should be weighed very carefully before it is definitely decided not to bond tank-car unloading tracks:

The importance of preventing electric sparks during the transfer of flammable liquids is being constantly impressed through direct experience. The basic consideration is that vapors from flammable liquids may be ignited by direct flame or spark from any source. A spark does not



WHAT'S WRONG with this picture? That looks like a well constructed, well maintained pump house which couldn't be considered hazardous. The pipe line also appears to be all right.

YOU GUESSED right, it's a poor location for a diesel fueling station. Insurance engineers would object to its being adjacent to sand house and to a caboose which has been parked nearby.

occur unless a difference of electrical potential exists, and it is to prevent this condition that Circular 17-C and its supplements have been issued to outline safe practices. A difference of potential of one volt is sufficient to cause a spark if low resistance exists. A leak from a conductor producing a difference of potential of 5 to 10 volts introduces the possibility of a fire hazard. In special cases a difference as high as 100 volts has been detected, as in the case of an adjacent electric railway operation. Leakage from power lines has been conveyed to pipe lines and tanks, where the provisions of A.A.R. circulars have not been carefully observed.

Considerable latitude is implied in Paragraph B-4 of Circular 17-C with respect to special measures that may be required under specific local conditions. Among these can be considered the application of a temporary ground connection with a clamp to be attached to the metal tank of a tank car to conduct to ground any static accumulation occasioned by the movement of the anhydrous liquid inside the tank while in transportation. This device is frequently referred to among unloading plants as a static eliminator. A stranded cable is attached firmly at one end to a rod or a section of steel pipe driven into damp ground. The other end is equipped with a giant clamp supplied with special points to penetrate the paint film on the body plates of the car.

The main portions of Circular 17-C referred to in the paragraph above concern the following requirements:

(A) *For all unloading tracks:* (1) A permanent electrical connection shall be made between the rails on which rail equipment may stand and the piping system used in connection with the transfer of inflammable liquids. The electrical connections shall be not less than one No. 4 or less than two No. 6 AWG stranded copper, bronze or copper-covered steel wire.

(B) *For all loading or unloading tracks not equipped for electric operation where there is evidence of stray currents,* in addition to A-1 above, the following requirements shall be met: (2) The section of track on which any part of the rail equipment may stand while an inflammable liquid is being transferred, shall be adequately bonded at each rail joint. (3) Insulated rail joints shall be installed to separate electrically the loading or unloading track section from all other track rails. Such insulated rail joints shall not be bridged by rail equipment or other means during transfer operations. (4) Other precautions, such as insulated joints in the permanent piping system, grounding, additional temporary bonds between the piping system and rail-equipment tank, and other special measures as may be required under specific local conditions, shall be taken to provide adequate protection.

(C) *For all loading tracks equipped for electric operation,* in addition to A-1 and B-2 to B-4 inclusive, the following additional requirements shall be met: (5) Adequate return conductors shall be installed from the rails of the insulated track section through a switch which, when closed, short circuits the insulated track joints. This switch shall be interlocked with a switch controlling the supply of propulsion power to the contact conductor of the insulated track section in such a way that normally when the return switch is open the contact conductor of the insulated track section is de-energized and connected to the main track-rail return. If the contact conductor of the insulated track section is a third rail, it may be grounded when de-energized instead of being connected to the main track-rail return. (6) Where values of short circuit currents may be introduced at the transfer tracks that would set up differences of potential of a hazardous magnitude, it is recommended that special studies be made by qualified persons and such additional or substitute measures taken as are necessary to provide adequate protection.*

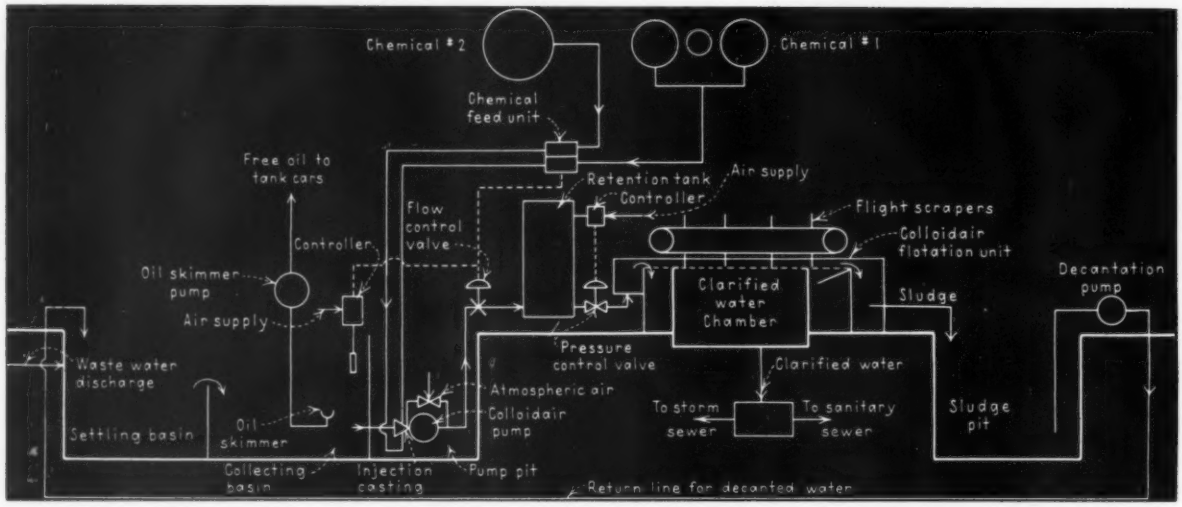
In conforming to these requirements it is well to remember that in territories equipped with automatic block signals or automatic train controls there is always the possibility of a difference of potential at oil-unloading tracks. There is also the hazard of stray currents from worn insulation on electric cables coming in contact with rails wherever electrically driven portable coal unloaders are used on tracks which may also be used for gasoline or diesel fuel-oil unloading operations.

Conclusion

In conclusion, in view of the possible losses that may occur and the experience of those who are vitally interested, the weight of this evidence seems to be preponderantly in favor of providing explosion-proof electrical installations at diesel fuel-oil pumphouses and the bonding, cross-bonding and grounding of diesel fuel oil unloading tracks.

* For hazards of vapors from petroleum products under all conditions see AAR Fire Protection and Insurance Section News Letter No. 91, March 1943, p. 23. For the hazards of transferring flammable liquids from tank cars see News Letter No. 99, June 1945.

"Colloidair" Separator Does It . . .



THIS DIAGRAM traces oily wastes from time they enter at left until, clarified, they reach sewer or return for second treatment.

How the U. P. Treats Waste Water

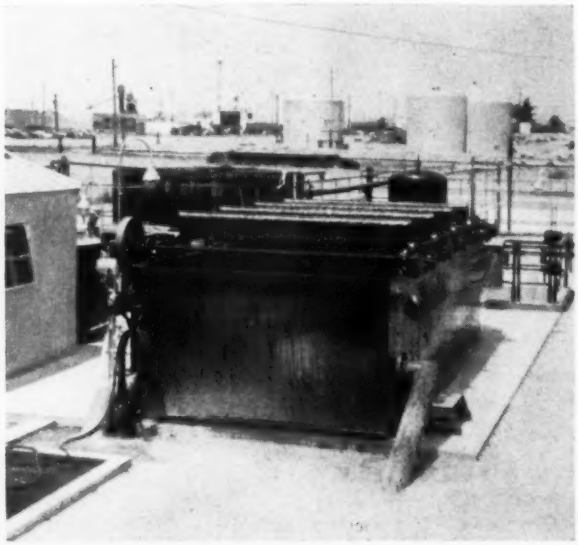
The dissolved-air process of treating oily locomotive-terminal wastes brings them into conformity with rigid and severe standards of disposal established by public authorities.

● Cooperation between the Union Pacific, its contracting consultants—Bulkley, Dunton Processes, Inc.*—and the City of Los Angeles has produced a system of waste water treatment that assures surrounding communities that their water supply will not be polluted by effluent from the railroad's terminal operations. To be able to give that assurance presented a large order. By necessity, the standards of quality for waters discharged into the Los Angeles river have been designed to be "adequately stringent to insure protection of the underground water supply." The full text of those standards are given in a table accompanying this article.

The necessity that requires such severe standards arises largely from the soil formations through which the Los Angeles river flows. Through the heart of the metropolitan area, the river channel has been paved, but at the end of the pavement the river flows onto a sandy gravel bottom. Much of the

* Pasadena, Calif., New York, and Chicago.

GENERAL VIEW of separator showing sludge pit in foreground.



LOOKING at sludge-discharge end of Colloidair Flotation Unit.

river water seeps through this pervious material into the under ground storage basins from which several private and municipal water companies draw drinking-water supplies for small communities southeast of Los Angeles. Under such conditions any potential contamination of river water must be prevented. To obviate possible contamination, the Industrial Waste Advisory Committee adopted the strict standards of quality listed in the table for any water discharged into the river.

Analysis of Waste

Investigation and subsequent analysis of the waste waters flowing from the U.P. locomotive-terminal and shop area disclosed that they contained free oils (petroleum, vegetable and animal); emulsified oils of similar character; finely divided soil in suspension; finely divided boiler sludge particles in suspension; and small pieces of grass, leaves and other types of organic solids.

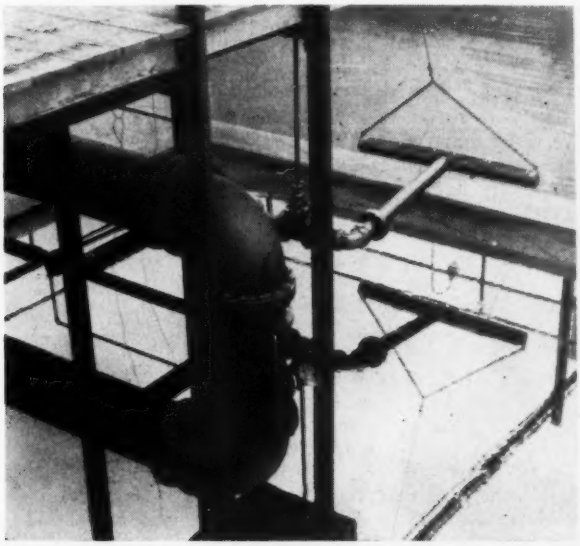
To bring water containing a large quantity of such foreign material into conformity with the standards of quality was difficult principally because of the large amounts of free and emulsified oil contained in the waste water. From past experience gravity-separation systems were known to be inadequate to produce an effluent of such high quality. However, dissolved-air and chemical-flocculation methods had produced excellent results under similar conditions. On the basis of that record, and other considerations, a Bulkley, Dunton "Colloidair"-Separator system was installed. With this system, in spite of the large volume of contaminated water flowing into it, the free and emulsified oils are reduced to much less than the permissible 25 ppm. while not less than 90 per cent of the suspended solids are removed. In fact, after the system had been in use for some time, two random laboratory reports showed that the free oil and grease in the effluent had been reduced to a mere 10.7 ppm. at one time and to 12.0 ppm. at another. In these two cases the pH of the effluent was tested at 5.51 and 6.88, respectively—well within the quality limits of 5.5 to 9.0.

What is this dissolved-air system that works so effectively as an industrial-waste treatment? Basically, the method consists of introducing the correct amount of air under pressure into the influent to obtain good flotation and produce floc as the air comes out of solution. This flocculation is speeded up, in some cases, by the addition of colloidally active compounds, principally activated silica and aluminum sulphate. The addition of these compounds augments the dissolved-air flotation efficiency by altering the iso-electric point, causing mutual colloidal flocculation without requiring major changes of the hydrogen-ion concentration of the system. Only a few parts per million of these chemicals, which cost only a few cents per 1000 gal. of water, are needed to achieve the desired results. It is claimed that, by this method, emulsions are broken efficiently, and colloidal-size particles and some dissolved solids are removed in addition to the suspended

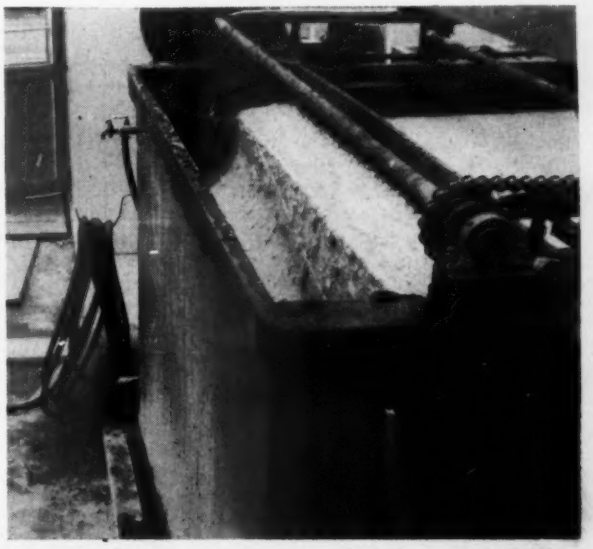
Required Quality Standards of Wastes Discharged into Los Angeles River*

Substance	Content
Suspended solids (not to exceed 60 per cent volatile)	100 ppm.
Petroleum oil	None
Other oil, grease, or soap	25 ppm.
Caustic alkalinity	100 "
5-day B.O.D. (biochemical oxygen demand)	20 "
pH	5.5 to 9.0
Color	40 ppm.
Putrescible matter	None
Sulphide	1 ppm.
Gums, lacquers, solvents, hydrocarbons; other flammable substances	None
Cyanides, phenols, chromates; other toxic substances	None
Salts of heavy metals not to exceed U.S.P.H.S. standard	

* Below Riverside-Dayton Bridge.



OIL SKIMMER mirrored in free oil floating in collector basin.



FLIGHT SCRAPERS wipe sludge across weir in flotation chamber.

WATER is freed from the sludge after stilling in this pit, and is pumped off through a decantation pipe, shown here in a raised position, then treated again.

CLARIFIED WATER flowing from the Colloidair Separator into this chamber. This clear water is what finally reaches the sewers, leaving all its contaminants behind.

particles contained in the water.

In the U. P. installation at Los Angeles all the waste waters from the yard and shops are collected in a sewer system which discharges first into a settling basin and then over a weir into a collecting basin as shown at the left of an accompanying flow diagram. These basins serve three purposes: (1) They allow solids, such as sand, gravel and heavy boiler sludge to settle out where it is convenient to remove them. (2) They permit excessive free oils, such as occur from heavy spillages, to separate by gravity. (This reduces costs in two ways: (a) Since these oils are recovered in a free state, being pumped directly into tank cars, they can be readily used for weed eradication or reused in event of a very heavy spillage; (b) by eliminating excessive free oils before chemical treatment, it reduces the chemicals needed in the Colloidair Separator to break oil emulsions and increase the flocculent flotation. The Colloidair Separator unit itself will remove these free oils efficiently but if they are in large quantities, they merely absorb chemicals which are intended to do a more difficult job.) (3) They provide surge chambers from which pump suction can be taken and where the automatic flow control activator may be installed.

The waste water is picked up from the collecting basin by a special Colloidair pump. In the suction of this pump, which forces the water into a retention tank, just the right amount of air is introduced to the flow and dissolved at pressures in excess of 25 psi. Only that amount of air is used which can be kept in solution passing through the retention tank. At the same time the air is introduced, two chemicals are fed into the water undergoing treatment through an injector casting which is located ahead of the Colloidair pump.

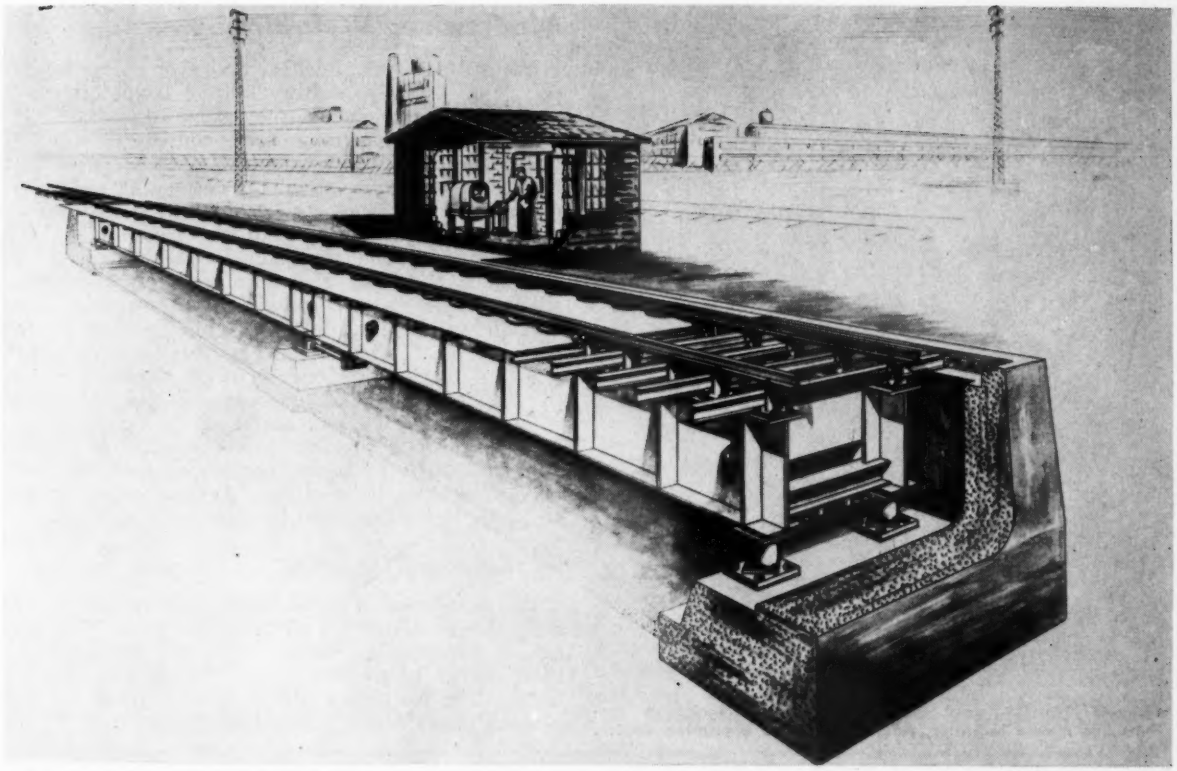
Automatic Pressure Control

The mixture is then held in the retention tank long enough to obtain the air in true solution. The maintenance of the established pressure in the tank, regardless of variations in flow, is controlled by an automatic pressure-control valve at the outlet side of the tank. This automatic control releases the mixture continuously into the inlet chamber of the Colloidair Separator unit, where it is stilled and distributed over a weir into a flotation chamber. Separation occurs in the flotation chamber and the floated particles (called sludge) are mechanically skimmed by "flight scrapers" attached to an endless belt into a sludge-discharge chamber and then gravitated to a sludge pit.

The sludge pit is equipped with a decantation pump which further reduces sludge volume by decanting water freed by stilling. This water is discharged back into the surge or collecting pit and is re-run with the waste water. The clarified water is taken off the bottom of the flotation chamber and overflows into a special chamber. From this flotation chamber the clarified water flows by gravity to a collecting box which has provisions for diverting the water either into the city sanitary sewer system or into the storm sewer system.

Standby Pump Installed

The Colloidair unit installed on the U.P. is a Model 500, having a rated capacity of 500 gpm., but with a pump capacity of 625 gpm. so as to handle anticipated peaks. There are two of these pumps, one of which is kept as a standby to avoid possible shutdowns. There are also two collecting basins provided so that settleable solids can be removed from one while the other is in operation.



TYPICAL INSTALLATION—A schematic drawing of an electronic-scale weighbridge supported on strain-gage "load cells".

Modernized Weighing . . .

Electronic Scales Are the Latest

RECORDING INSTRUMENT with indicating dial has a tare-adjusting dial and printer operated by push button.

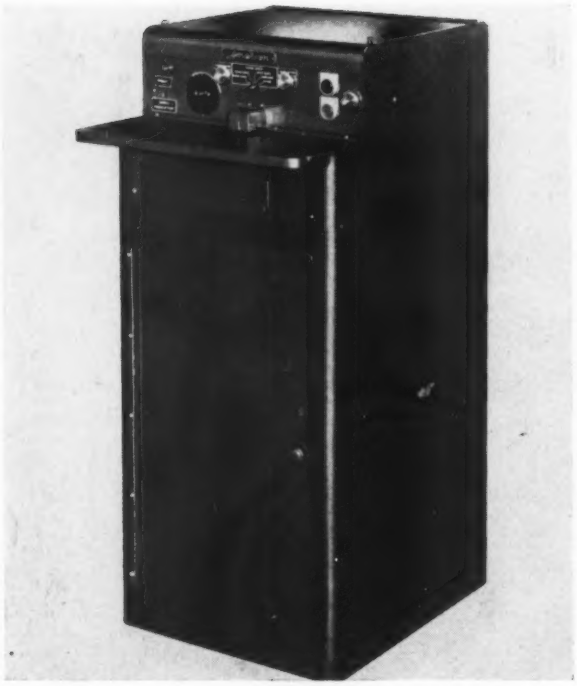
New weighing method now being used to a limited extent in recently constructed yards is said to have promise as a means of increasing the speed and accuracy of obtaining the weights of cars in motion.

By Verne C. Kennedy, Jr.
Supervisor of Engineering
Streeter-Amet Company, Chicago

● The art of weighing has advanced rapidly in recent years by virture of the development of several new weighing methods. Typical of these are the recently introduced pneumatic, hydraulic, and electrical weighing systems of which only the electrical are available for heavy-capacity weighing at the present time. Considerable impetus was given to the advance of this method by the availability, in recent years, of electrical 'load cells' which are sufficiently accurate for commerical weighing.

At present several electronic-scale systems employing these load cells are in operation, are being tested, or are in the process of installation on railroads. Little detailed data are yet available on their operation, but that which has been accumulated indicates that they are

This material was originally submitted for use in the What's the Answer department but because of its scope it was withheld for presentation here as a separate article. Other discussions of the same subject appeared in What's the Answer department of the December issue.



CABINET PRINTER used on some electronic weighing systems has a zero indicator, range switch and a printing device.

Modernized Weighing . . .

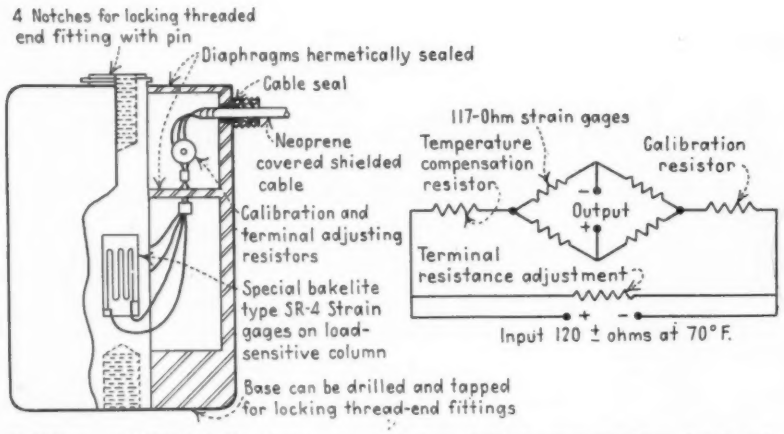
proving themselves practical and economical for railway use. Actually, railway officers have termed the possibilities so good that "they excite the imagination."

Basically, an electronic scale consists of a weighbridge supported on a number of those "load cells" connected by electric circuits to correlating and recording instruments which are calibrated to indicate and print weights. It is possible to use electronic load cells with a conventional mechanical weighbridge and pit, but since the load cells are relatively compact, a shallower pit is also permissible. The use of load cells also allows the easy design of either a three or five-section scale. This gives an opportunity to design the scale for maximum economy of pit depth, steel, and the number of load cells. In some cases they can be used where mechanical scales would not be desirable.

Since the load cells are only connected electrically, two separate small scales, one under each car truck, may sometimes be desirable. In this case the steel and pit requirements can be materially reduced.

Installation and Operation

The installation of an electronic scale system is essentially similar to that for mechanical systems. The same care is required in concrete work and alinement, but there are no levers to align and no fulcrum stands to install. The load cells are simply mounted on their bearing plates and connected electrically.



INTERNAL CONSTRUCTION (left) of a typical Baldwin-Lima-Hamilton load cell. Circuit diagram at right shows how four strain gages form a Wheatstone bridge.

How an Electronic Scale Works

The heart of an electronic scale system is an SR-4 strain gage, developed in 1939 by Ruge and Simmons and now manufactured by the Baldwin-Lima-Hamilton Corporation. The SR-4 is a very sensitive device which allows the electrical measurement of strain in any object to which it is attached. A further development which converts the sensitivity of the strain gage into a weighing device, is called a "load cell." Typical load cells are shown in an accompanying illustration.

In a Baldwin cell, a strain gage is bonded to each surface of a square, calibrated, load-receiving column, forming a Wheatstone bridge through which an electric current passes. Any deflection of the load-receiving column, due to a load on the cell, causes corresponding deflections of the strain gages. These deflections of the strain gages change their resistances and cause a change in the voltage across the bridge. This change in voltage is in exact proportion to the amount of load on that cell. Thus, when calibrated measurements of all the voltage changes occurring at several cells under a weighbridge supporting a car are recorded, the weight of the car is determined.

Each cell includes resistors to compensate for the change in physical characteristics of the load-receiving column when a temperature change occurs. A rise in temperature will cause a greater deflection for a given load and these resistors compensate for this change. During a violent temperature change, slightly erratic readings may be noted, but once the cells have reached a steady state, the cell will resume its normal operation. Wherever violent temperature changes are anticipated, provision is made for insulating the load cell to eliminate this period of inaccuracy. Each cell is hermetically sealed and equipped with a standard pipe connector. This allows cells to be installed under very adverse conditions, such as being subjected to oil, water, or dirt, without adversely affecting their accuracy.

Electrical Instrumentation

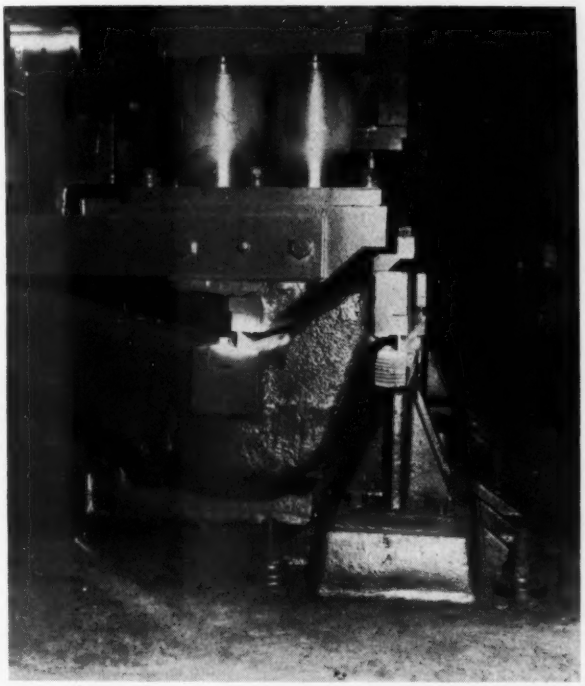
To convert the voltage changes set up by different loads applied to the cells into recorded weights, two systems of instrumentation—one electrical and the other mechanical—must be provided. The electrical instrumentation for the electronic scale provides a means for converting the electrical output of a load cell to mechanical energy by which the forces exerted on load cells may be recorded and printed. When a force is introduced on a load cell, the output voltage from the strain gage is fed to a balancing

The recording or indicating instrument may be placed in a conventional scale house, or it may be located elsewhere. Although certain design details become more complex as the distance between the scale and the instrument increases, distances of several hundred feet are entirely feasible. The operation of the instrument depends on the specific weighing application. In a dormant scale the weight is printed on tape or ticket by an actuating button. In motion applications the car itself actuates the printing circuit. Zero adjustment is made when necessary by a knob on the instrument. If a dial is not used, a zero indicator is included.

In dormant scales, increased readability can be achieved by use of range switching. This corresponds to drop weights on a mechanical scale. In this case, the operator manually adjusts the weighing range of the recorder. With this type of instrumentation, readability in excess of one part in 6000 is available.

Electronic scales may be furnished to read either the gross load or the net load on the scale. If net-load readings are desired, a calibrated tare weight compensating dial is provided on the control panel of the recorder. Some recorders, in addition to printing weights, also visually indicate them on a large dial mounted on the top of the recorder.

Electronics have taken over practically all forms of control and instrumentation; hence, there can be no doubt of the dependability and utility of the electronic components of electrical scales. The growth of their use in weighing systems is definitely assured.



LOAD CELLS can also be applied to conventional scales like this Fairbanks-Morse plate-fulcrum type recently built.

bridge arrangement previously mentioned. This system is initially in electrical balance. The introduction of the voltage across one leg of the bridge causes an unbalanced condition. The difference in potential thus produced is directed into an amplifier. From the amplifier, the voltage operates a servo-balancing motor which causes a precision potentiometer—the variable resistance—to rotate until the system is once again in balance. Simultaneously, with the balancing of the circuit, the motor is also operating the recording apparatus. This circuit is phase-sensitive, and the removal of the force from the load cell causes the motor to reverse its direction of rotation, bringing the potentiometer back to its original position.

SIX LOAD CELLS—All used in compression but only three on right in tension too.

Mechanical Instrumentation

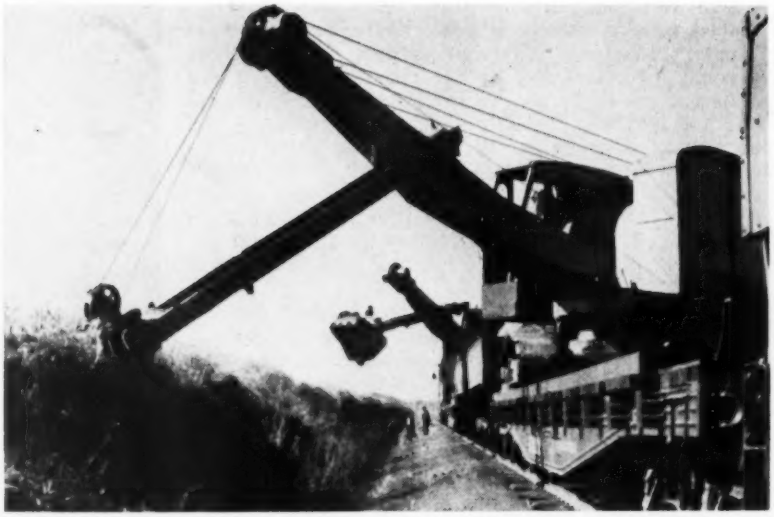
The mechanical recording apparatus consists of a series of step cams which convert rotational information from the servomotor to digital information on the printer. The step cams are positioned at a point proportional to the weight on the scale and, when a print is desired, a switch is closed which actuates the printer motor. A set of fingers is moved into position on the step cams by means of a cam working off the printer motor. The fingers are directed into the correct step by means of correlating and step-over discs.

Two correlating discs and one step-over sensing disc are used to accomplish this. The fingers are moved into place in a definite order. When the step cams are positioned, one correlating finger moves into the high-speed correlating disc which controls the positioning of the high-speed step cam. If this cam should be slightly out of position, the correlating finger meshing with the correlating disc will bring it to the correct position. The correlating finger locks the high-speed cam at the time of the weighing operation.

When the correlating fingers are in position, the fingers which operate the typewheels are moved into place. Attached to each of the fingers is a rack which meshes with a pinion on each of the small typewheels. When these are correctly positioned, a second cam actuates the print hammer which is forced against the tape and typewheel, giving the printed information. After a print is taken, the cam releases the sensing fingers and they are brought back to a waiting position by an automatic lever action.

In motion weighing the actuation of the recorder is controlled by the wheels of the car as it crosses the scale. Thus, the amount of time the car must be on the scale is a vital consideration. Under normal conditions the car must be alone on the scale for four seconds. This allows time for the servo system to achieve equilibrium. As in mechanical weighing, any discontinuity in the track, on the scale or on the bridge, may give an erroneous result. Also, because flat wheels, bouncing cars and other external causes can create errors, smooth track conditions and careful car handling are very desirable.

By operating crawler shovels, equipped with extra-long dipper sticks, atop especially-fitted flat cars in work trains, the Illinois Central is effectively ditching and widening cuts too narrow to permit the use of off-track equipment. Two outfits of this type are used, each consisting, in addition to the engine and caboose, of two of the crawler shovels, four side-dump cars and a spreader.



EXTRA-LONG REACH obtained with these crawler cranes made possible efficient "top-car" operation in improving the drainage in this cut located near Clinton, Ill.

"King-Size" Dipper Sticks Aid Cut-Widening Operations

• Cut ditching and widening work on the Illinois Central is done with either off-track machines or on-track equipment, depending upon the conditions at the particular location. For use within cuts too narrow for the efficient operation of off-track machines, the railroad is using a number of crawler shovels especially equipped with dipper sticks of unusual length to permit them to operate effectively when mounted "piggy-back" style on flat cars. These longer dipper sticks, aided by a crowding action, make it possible to obtain ditches of ample width and depth for good drainage. Although these shovels have been used car-mounted for this type of work since they were first obtained by the railroad, it is pointed out that, whenever desired, they may be used in various types of off-track operations.

Two Outfits in Operation

The railroad has four of these special crawler shovels, which are operated in pairs in two ditching outfits, one on the road's Northern lines and the other on the Southern lines. Each outfit, in addition to the two shovels, incorporates a Jordan spreader and four 20-cu. yd. air side-dump cars. The shovels are Koehring Model 304 diesel-powered units, equipped with ¾-cu. yd. buckets and fitted with special 17-ft. dipper sticks in place of the 15 ft. sticks that are standard for this model. To adapt them for this particular use, the flat cars have steel guides fastened to their decks, which form channels in which ride the treads of the crawler shovels. Stops are installed in the guides at the extreme ends of the cars so that each shovel can operate a distance, equal to the length of the flat car upon which it is mounted. With its dipper stick fully extended the shovel can deposit material at the ends of the adjacent dump cars.

The consist of equipment in each work train, beginning at the head end, is as follows: Locomotive and tender, spreader, dump car, crawler shovel, two dump cars, crawler shovel, dump car, and caboose. With this arrangement, each shovel is able to fill the two cars immediately adjacent to it by moving from one end of its flat car to the other. Once the work train is spotted in the cut, no further movement is required during the excavation, work until the second crane reaches the area previously worked by the first. The shovel cranes are able to reach approximately 26 ft. out from the center of the track. The dump cars are of the side-dump type and are rated at 20-cu. yd. struck capacity, although it has been found that they can be consistently loaded to about 25 cu. yd. by heaping. In this manner, the train is able to carry a total load of approximately 100 cu. yd. of material on each trip.

A typical example of this type of operation was recently observed in a 31-ft. deep cut known as Salt Creek Cut, located on the road's single-track main line southwest of Clinton, Ill. The mile-long cut, the scene of several ballast washouts, was widened and a nearby fill strengthened with the excavated material, at a total cost of approximately $6,600.

Fill Needed Strengthening

When all of the cars had been loaded in the cut, the work train backed up the line a distance of approximately a mile to a fill located on the opposite side of Salt creek. This embankment, which has a maximum height of about 24 ft., was in need of strengthening as a result of erosion of the shoulders and side slopes. Upon reaching the site where the material excavated from the cut was to be deposited, the train backed up at slow speed while the cars were dumped, one at a time, along the shoulder of the track.

After all four cars had been dumped, the flat cars, dump cars, and caboose were uncoupled from the locomotive and Jordan spreader which proceeded to the spot where the first of the material had been deposited. Here the spreader wings were extended and the plow blades lowered. As the locomotive

MATERIAL excavated from the cut was hauled to a fill, located about a mile away, and dumped from the air side-dump cars.

THE JORDAN SPREADER, uncoupled from the rest of the train, then spreads the dumped material along the roadbed shoulder.

on the IC

backed toward the remainder of the train, the dumped material was spread in one pass. The train was then recoupled and proceeded back to the cut for another load.

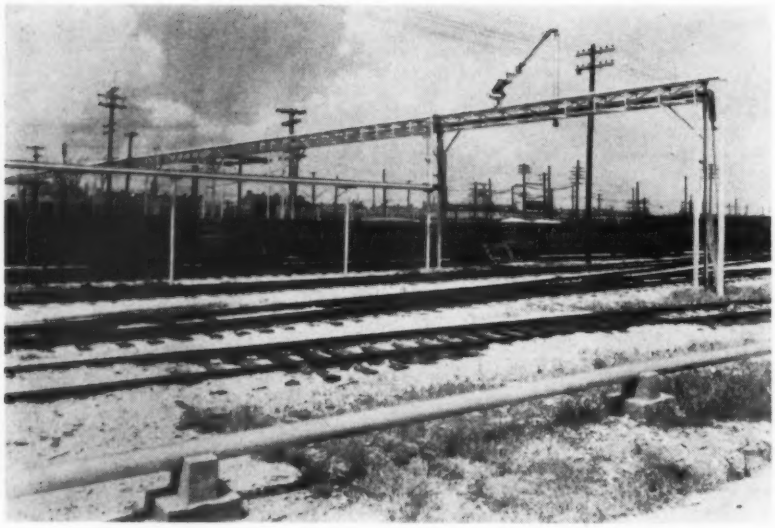
Work Done Under Traffic

The operation, which was begun on September 17, 1952, and completed on October 22, was carried out under traffic. It involved the excavation and placement of some 18,000 cu. yd. of material. An average of 20 loads was handled each day at the rate of about four loads per hour. Between 5 and 5½ hr. were spent each day in actual excavation work—the remainder of the day's time being consumed in clearing for trains and for traveling and unloading. Traffic on the line averaged eight trains per day. The entire program was carried out on an 8-hr. day, 5-day-a-week basis. The cost of the work, including work train and all other charges, was $0.366 per cu. yd. of material handled.

The work was carried out under the direct supervision of F. T. Kraft, division engineer of the road's Springfield division at Clinton. Mr. Kraft expects that considerable savings in maintenance expenditures will be realized now that drainage in the cut has been improved.

THE CUT, when the ditching operation had been completed, looked like this. Savings in maintenance expenditures were expected as a result of improved drainage.

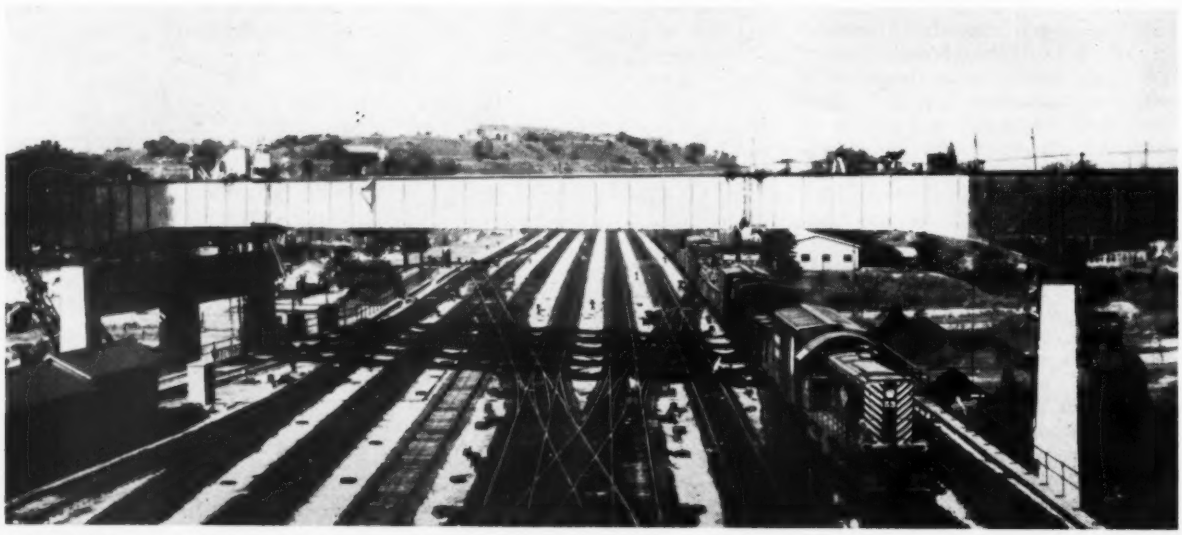
THE FILL, a victim of shoulder and side-slope erosion, was strengthened with the excavated material, and presented this appearance after the work was finished.



In an effort to combat the corrosive effect of the elements and guard against internal corrosion in this new, 1,200-ft. long, 6-in. diameter, all-welded diesel fuel line (foreground) in the yards of the New Orleans Union Passenger Terminal, wrought iron pipe was specified. Similar protection was in mind when wrought iron was specified for the overhead water line across the tracks.

The Maine Central recently recovered 43,000 usable ties and 1,235 tons of steel from an abandoned 38-mile stretch of track between Rumford Junction, Me., and Canton. The contractor, E. J. Riaux of Portland, Me., used the Schield Bantam logging crane and pulp wood grapple shown here to load reclaimed ties, tieplates, straps, track bolts and spikes.

News Briefs in Pictures . . .



THE GIRDERS of this highway overpass located at Kansas City were recently metallized with a .012-in. zinc coating to protect the structure from corrosive effects of flue gases from locomotives which pass beneath the bridge 24 hours per day.

THE SPRAY CAR, shown here in operation on the T&NO. This particular job, carried out in mid-summer of 1952, involved spraying of thick stands of varied species of brush located under communication lines between Lufkin and Nacogdoches, Tex.

How the SP Licked a Tough Brush Problem

Exceedingly fast-growing conditions prevail in parts of Louisiana and Texas for trees and brush, thereby presenting a difficult problem of control on railroad right of ways. This article describes the severity of this problem as it is encountered on the Southern Pacific Lines in Texas and Louisiana, and tells how it is being solved through the use of chemical brush killers.

• Trees grow surprisingly fast in the swamps and bayou country of Louisiana and parts of East Texas. Willow seedlings commonly attain a height of 12 ft. in a single year. Willows sprouting from stumps in cut-over country will grow as much as 22 ft. in a year. Buttonwood, wild persimmon, cypress, ash, and tupelo, while not keeping pace with the willow, are not far behind. The annual flooding of the area assures a new crop of seedlings each year.

Keeping these fast-growing trees under control is not something which can be done economically by hacking them down every few years. Where they grow under and alongside signal and communication lines on railroad right of ways, the land must be cleared once a year; where willows are particularly thick and poles are short, even more frequent cutting may be required.

This is but a brief background for a development which affected a figure in the 1949 maintenance budget of the Southern Pacific's T&NO (Texas & New Orleans) line. That figure was $200 per mile, twice yearly, giving an annual cost of $400 per mile to keep trees and brush out of the communication lines through the Chachoula swamp, between Morgan City, La., and Raceland.

The following year (1950) the T&NO instituted a new program of brush control, which cost $225 per mile, and herein lies a paradox in this problem of maintenance costs, for the latter figure represented a saving of more than 80 per cent in brush control costs. The answer is that for three years it has not been necessary to touch these areas.

How was this saving accomplished? Simply by switching from brush hooks and axes to a spray car and chemicals. A chemical (Ammate weed killer) was used, which is reported to give not only complete top kill of brush and trees, but a high percentage of root kill also. In 1953, the T&NO plans to spray these areas again to catch new growth, but it will be largely a matter of spot treatment rather than general spraying, so the cost will not be as great as that of the original application.

Experience of Utilities

To understand what prompted this switch to chemicals to cure the brush headache, it is necessary to

go back a few years. Some time ago, Gulf States Utilities Company of Baton Rouge, La., purchased an unused T&NO right of way running through the Atchafalaya swamps, between Ramah levee and Whisky Bay channel. Along this right of way they built a 132-kv. transmission line, the poles of which were placed both alongside and directly on the railroad roadbed.

It was not economically practical to dispose of the stumps and trunks of 40-ft. willow trees when an opening for this line was slashed in the summer of 1948. In the months that ensued, these slashed trees, combined with sloughs, ponds, bogs, floating turf, and annual deposits of sand and debris, created what one power company official described as "an unholy mess!"

Following the normal seasonal pattern for this section, about four or five months of each year the roadbed and all surrounding areas are submerged with several feet of water coming from floods in the Atchafalaya, Mississippi and Red rivers. In fact, during some years the ground beside the roadbed never dries out from one season to the next.

The utilities company was accustomed to use mechanical equipment to clear brush under its lines. But such equipment was found impractical in the swamp area. Bulldozers would bog down, men would stumble on the trunks and stumps and mire down in the sloughs, and the stalk cutter could not be pulled through the muck alongside the trackage area, even using an army half-track.

The consequence was that the company decided to try chemical control of the brush in 1949. For a number of reasons it was decided to use Ammate weed killer which is based on ammonium sulfamate. It had been learned that successful applications of this chemical had been made the year before by the American Telephone & Telegraph Co., near St. Louis, and by the Southwestern Bell Telephone Company in the Houston area. In both cases there was reported to be a high percentage of both top and root kill for even the hard-to-kill varieties.

Spraying was started in the middle of August 1949. The job was placed in the hands of the Davey Tree Expert Company, which had also handled the telephone-line spraying operations. A skid-mounted gasoline-driven pump was used, connected to a 400-gal. tank in which the chemical solution was placed. The sprayer was mounted on a small flat car and pulled along the track with a gasoline-powered motor car. Pressure was sufficient to throw a drench of spray 60 ft. from the sprayer. If it was desirable to spray growth a greater distance from the track, a length of hose was reeled out.

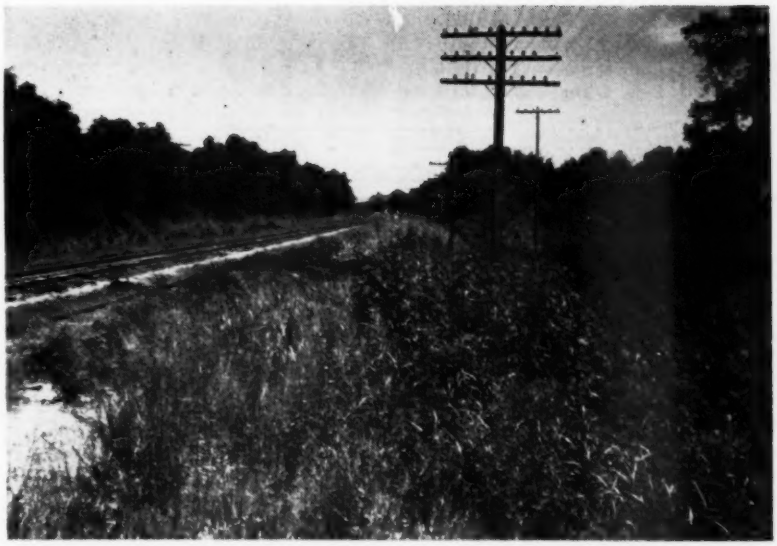
PART OF THE SWAMP area along tracks sprayed in 1950. This photo, taken in mid-September 1952, shows control of growth under signal and communication lines.

SPRAYED IN 1951, this area near Gibson, La., further illustrates growth control. Note the heavy stand of brush at the left, where the spray was not applied.

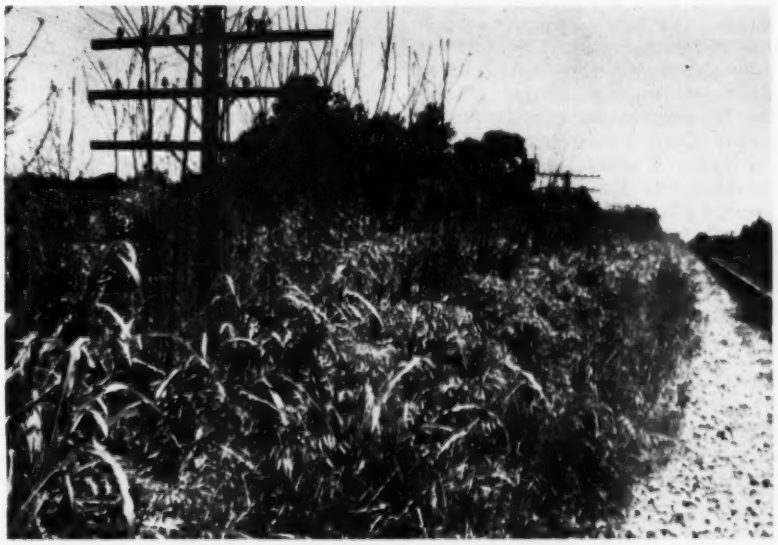
Railroad Observes Results

Because the T&NO line has had plenty of trouble with brush control in similar low areas, its maintenance officers followed the progress of this power-line spraying work with considerable interest. They noted that there was progressive action of the chemical on all the brush species present; that the foliage began to turn brown within a few hours after the spray was applied; that it would take on a dead appearance within a couple of days; and that a month later a ¾-in. willow branch could easily be snapped in the bare hands.

It was as a result of these observations that the T&NO began drenching the brush with chemical killer between Morgan City and Raceland, 34 miles, in 1950. A 2,000-gal. self-propelled railroad sprayer, originally built to spray weeds on the track, was used. This



BRUSH from six to 15-ft. in height was imperiling the signal and communication service here in the Chacoula swamp prior to spraying with weed-killer in 1950.



NOTE the leafless, dead stems of brush, as high as the wires, in this picture taken near Franklin, La., 90 days after the right-of-way was sprayed in June 1952.

was equipped with a pump delivering a spray pressure of 600 psi.

This equipment was converted for brush spraying by building a pair of spray towers from which the spray-gun operators could direct their nozzles at brush beneath the communication lines. The car moves at approximately 4 m.p.h. The average crew consisted of four men—an operator, a conductor, and two sprayers.

Other Areas Sprayed

In view of satisfactory results following the 1950 spraying, the T&NO spray crew attacked other troublesome spots in 1951. Spraying that year covered about 37 miles of line in two different areas. One section sprayed was in the Calcasieu River country near Sulphur, La. Another area treated was just east of the Sabine river which divides Louisiana and Texas.

These were in higher altitudes than the swamp area treated the year before. The brush here was less dense, but contained many of the slower growing, hard-to-kill varieties, including pecan, wild dogwood, Bois d'Arc (osage orange), and locust. Again, satisfactory results were reported.

The 1952 spraying program along the Louisiana division of the line included even more spots where hand cutting has been an expensive, never-ending job. The brush was drenched along 10 miles between Raceland and New Iberia. 4½ miles between Shriever and Houma, and 15⅛ miles between Lafayette and Mile Post 25. Spray crews have also been busy the past two summers along some of the Texas divisions of the T&NO which runs from El Paso to New Orleans. With the first year of spraying in the Chachoula swamp as an indication of the results which could be attained with chemical brush killers, similar spots were treated, particularly in East Texas.

Ingredients of Spray Solution

The spray solution used is made up of a pound of Ammate weed killer per gallon of water. Somewhat weaker solutions will kill willows, but with quite a variety of brush species along much of the right of way the pound-per gallon dosage has demonstrated its ability to give much better over-all effectiveness.

Still another ingredient goes into the spray tank. This is known as "spreader-sticker." An ounce of this wetting agent is added for every 40 gal. of spray solution. The result is that the spray is said to spread evenly over the leaf surfaces rather than standing in droplets. This is said to increase the effectiveness of the chemical.

One characteristic of Ammate weed killer is its tendency to cause corrosion of certain metal surfaces. Care in rinsing out spray tanks, pumps, and nozzles after each use, preferably with the inclusion of some soda in the rinse water, is said to protect this equipment. But what about the communication wires, which get sprayed along with the brush? Close observation of the copper wire and cables used in the T&NO signal and communications systems is reported to have revealed no noticeable corrosion in sprayed areas.

The trend toward chemical control of right-of-way brush on the T&NO is not the only field in which some of the new chemical compounds are being tested on this road. Experiments were in progress last summer with a new weed killer known as CMU, aimed at longlasting control of all growth on roadbeds, around trestles, in switch yards, and storage areas. On the basis of these tests, there are indications that an entirely new method of handling these maintenance problems may develop.

WHAT'S THE ANSWER? . . .

. . . a forum on track, bridge, building and water service problems

"Post Mortem" Examination of Old Ties

What benefits might be derived from making a "post mortem" examination of ties removed from main tracks? How, when and by whom should the examination be made? What conditions should be noted? Why?

Will Reduce Failures

By C. D. Turley
Engineer, Ties & Treatment,
Illinois Central, Chicago

A careful examination of ties after they have been removed from track should develop the principal causes of failure and the percentage of total failures from each cause. Ties with additional life remaining—and this is important—are often found and necessary action taken for correction.

The examination of the ties should be made by the supervisor of track and the division engineer as soon after their removal as practicable. In case unusual conditions develop, such as early failures from decay or other defects, the matter should be referred to the engineer maintenance-of-way for study and necessary handling.

Crossties ordinarily fail from decay, mechanical wear, natural defects in the wood or from damage by dragging equipment or derailments resulting from the operation of trains. If failures from decay are heavy, the seasoning, treating methods and the preservatives used should be studied and examined. If mechanical wear is out of line, the track structure should be checked, taking into account the volume and kind of traffic involved. Finally, if losses from natural defects in the wood are sizable, the field inspection should be given careful investigation and study.

At least two important railroads are now providing trained inspectors to mark or assist division track-maintenance men in marking ties for renewal ahead of main-line track surfacing gangs. Five of the major advantages of this system are: (1) *A date is set and definite arrangements are made for the inspection and marking of ties on a particular district.* Too often track foremen, with their many duties, including the safety of their men and the responsibility of obtaining a full day's work, fail to make the necessary careful examination of ties before removal. (2) *Uniform marking is obtained.* It is easier to teach a few trained inspectors how ties are to be marked than to impart this same information to all the track foremen on the railroad. (3) *A more careful examination of ties is made.* Two experienced men are given a special assignment of marking ties for renewal. An improved job results. Frequently ties at rail joints should be removed while ties of similar physical condition located at quarter points may be left in track. (4) *Uniform tie condition will be acquired.* Since each tie is examined separately and renewals are made according to fixed standards, a more uniform tie condition will eventually result and there will be a more equal distribution of new ties from mile to mile and from rail to rail. (5) *Less ties will be removed.* As a result of the above four items of procedure, less ties, on the average, will be required to maintain a mile of track; improved and more uniform track conditions, mile to mile, will result; and track-maintenance labor will be greatly reduced.

Exams Are Paying Off

By T. A. Blair
Chief Engineer, Santa Fe System,
Chicago

During the past two years the Santa Fe has examined and classified, by type of failure, 16 per cent of the ties removed from track. The

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Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least 30 days in advance of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the April Issue

1. To what extent is it practicable to preframe headblock ties before treatment so they will fit switch machines? Other switch ties requiring dapping, if any? Explain.

2. How often should building inspection be made? When? What details should be given particular attention at such times? Explain.

3. What are the best methods of keeping foremen up to date on general instructions? Should such instructions be completely reissued periodically? If so, at what intervals? Explain.

4. How often should turntable center blocks and bearings be inspected and lubricated. What details should an inspection cover? How can this be done best? Explain.

5. What effect, if any, does the type of ballast have on the number of rail anchors required? Are more or less anchors needed on rail supported on gravel ballast than on stone? Why?

6. What methods, if any, can be employed to prevent or minimize the cutting of sand pipes at locomotive servicing stations when compressed air is employed to elevate the sand? Explain.

age of each tie removed was recorded. This has given us a record showing, by percentages, the primary causes for removing ties of different types of wood. It is interesting to note that these records show that only five per cent of the ties were removed for decay, the remainder being taken out of track because of some type of mechanical failure.

The record we have obtained gives us an index as to necessary changes that may be beneficial in seasoning and treating ties, as well as a guide to economies that might be realized through additional expenditures for the protection of ties against the various types of mechanical wear being observed.

The most economical sampling of ties to determine the cause of removal is made in connection with extra-gang renewal of ties. Inspectors must have some knowledge of track-maintenance requirements and must know the different types of woods and treatments used. Basically, their work is to determine the primary cause of failure—whether decay, plate cutting, splitting, shattering, spike killing, broken, ring separation or accident. If available, the age of the tie should also be made a part of the record.

May Prevent Early Failures

By B. D. Howe
Chief Lumber Inspector, Louisville & Nashville, Louisville, Ky.

An intelligent examination of ties removed from main tracks should reveal information of value in determining the species of timber, type of treatment and kind of preservative best suited for a certain service. It should also give indications as to whether present practices with respect to tie spacing, type and size of tie plates, track drainage, and type and condition of ballast should be continued or changed.

The examination can best be made shortly after ties are removed from track during a relatively heavy renewal operation. In doing this the use of a pick, axe and saw will aid in arriving at a decision as to the principal cause of failure.

The selection of personnel best qualified to make the examination and correctly analyze reasons for failure is most important. Those chosen should know species of timber and should have had experience in track maintenance and wood preservation. All men assigned to such work should be able to contact each other frequently in an effort to make their diagnoses uniform.

To the extent possible, it should be determined whether mechanical damage preceded decay or decay caused mechanical failure; whether decay was present before treatment; and whether inadequate anti-splitting devices or their absence resulted in excessive splitting. If these facts can be determined, a correction of the practices causing early failures should result in extending tie life more than enough to justify the cost of the "post mortem."

Make Uniform Renewals

By B. F. McDermott
Roadmaster, Chicago & North Western, Brookings, S. D.

To appreciate fully the importance of the above question we must first realize the tremendous cost of crosstie installation. Conservatively speaking, 25,000 ties are installed on an average subdivision under the jurisdiction of one roadmaster during one season. These would cost approximately $62,500. Ties for renewals constitute the largest individual item of expense for material in maintenance. Hence, economy demands that the greatest care be exercised in determining just when a track tie should be removed from the track.

As a general rule, a tie containing one year of life can be left in the track until the next season and under few circumstances should a tie that contains more than two years of life be removed. There are certain conditions, however, which might alter this general rule. One of these is the instance in which two joint ties are in poor condition, causing a low joint or out-of-line condition. One or both of the joint ties should be renewed to remedy the condition.

Ties in track must be inspected annually in the fall. Those which will not last until the next inspection, with the exception as above stated, should be marked for removal. This inspection is made by the section foreman, and the roadmaster should personally make a sufficient field check on each section to know that the recommendations correspond with actual requirements. He will then report the number of ties for renewal on each mile of section.

In determining the necessity for replacing a tie under main or side track, the tie's condition as to decay and wear, the condition of adjacent ties and the importance of the track must be considered. The marking of such ties to be renewed each year should be done with great care to insure a uniform tie renewal over each section. There is a tendency on the part of some foremen to install ties too heavily in some locations. When this practice is allowed it will be but a short time until certain locations will get out of control and a considerable amount of bad ties will show up, resulting in wide gage, out-of-line and out-of-level conditions. To put such a track back into shape requires excessive tie installations and additional surfacing and lining, all of which would have been prevented if a uniform yearly tie renewal had been followed.

After the tie-renewal program has started in the spring of the year, the roadmaster should spot check such ties that have been removed from the track to make sure that such ties have served their usefulness and no other ties are being removed.

An inexperienced inspector can be fooled by the looks of a tie regardless of whether it is still in the track or whether it has been removed. Those making inspections must have training and experience to assure uniformity in their procedure and consistency in their conclusions.

It must be remembered that there are three basic causes that affect a tie and its span of life, namely, mechanical wear, decay and breakage. *Mechanical Wear*—Destruction of ties through mechanical wear is caused primarily by rail or plate cutting, spike killing and splitting, shattering crushing, track maintenance and ballast abrasion. All of these factors are affected by the size of the rail, type and application of tie plates, method of adzing, type of rail joint, number of rail anchors, whether rail is continuous welded or not and track maintenance. The rail joint is the greatest factor in causing mechanical wear in ties, and its ability to restrain the up-and-down movement of rail ends under load directly affects tie deterioration.

Decay—Ballast which retains moisture induces decay because the ties become wet and soggy. To an inexperienced inspector a decayed, wet, soggy tie may look fairly good after it has been re-

moved from the track. Close examination, however, will show that the tie, although appearing solid, is rotten and will fall apart when struck with a bar or pick. Likewise, a tie may look good on top, but when turned over it will be found hollow and decayed throughout, with the hollow parts packed with fouled ballast. The purpose of the crosstie is to hold the two rails to gage and to give a firm bearing under both rails. With this in mind, the inspector should examine the tie closely around the spike holes and where the tie plate or base of rail covers the tie. These points are where most untreated ties first begin to show signs of decay. A tie that is "spike killed" or that will not hold track spikes will not hold track to gage and is of no further use even though the rest of the tie may appear to be fairly good.

Breakage—This form of destruction is usually caused by center-bound track, and as a rule such ties break in the center and can easily be detected. Since they are of no use, they should be renewed. Of course, such center-bound locations should receive a general out-of-face lift after which tie breakage will be greatly reduced. Where good drainage conditions are maintained, ties will remain dry and will resist all mechanical wear much better.

In conclusion, it will be found that if the roadmaster will make a good check each fall of the ties that are marked to come out next season and then, after tie renewals have started in the spring, make a spot check of ties removed from track during the renewal season, good, uniform tie renewals will result each year.

Will Teach Foreman

By William Lindsey
Yard Foreman, Chicago & Illinois Midland, Pekin, Ill.

The greatest benefit derived from making a post-mortem examination of ties removed from track would be the resultant establishment of a tie-removal standard which would be a yardstick for future removals. That is, such an examination would correct former practices that may have resulted in many ties being removed long before their service life had been exhausted.

Such an examination should be made by the supervisor or some responsible maintenance officer who knows his ties. Ties should be piled so as to be easily checked, both as to final disposition or for further use, if any. The checking should be done as soon as possible after removal, so that an early disposition of ties can be made.

Only in this way can maximum tie service be obtained from all ties. If the foreman has been removing ties that have one or more years of service life remaining, this post mortem can correct such practice as well as setting a standard for him to follow in future tie renewals. Such a program might point out that ties which are split may not always have to be removed. It might also show that all ties which have undergone excessive spiking may not have to be taken out unless they are in a majority, or are on a curve. Some of these ties can be used in second-class tracks while others are of value in retarding easily eroded ground. The remainder can be disposed of by burning or removal from the premises. Thus, by frequent post mortem examinations, the full service life of a tie can be exacted.

Welded Rail on Steel Bridges

To what extent is it advisable to install continuous welded rail across steel bridges? Explain.

Found Very Satisfactory

By P. O. Ferris
Assistant General Manager and Chief Engineer, Delaware & Hudson, Albany, N. Y.

I would say there is no objection to laying welded rail across steel bridges, for we have laid it across both open-deck bridges and ballasted-deck bridges having spans varying from 20 ft. to 120 ft. From our experience with these installations of about 20 years I have heard of no disadvantages in this type of construction. To me, welded rail across ballasted deck bridges is no different than on any piece of ordinary open track, regardless of the length.

The action of continuous-welded rail has been thoroughly studied by various committees and experts and all seem to agree that it can be used successfully, provided the internal stresses set up in the rail due to temperature change are opposed by the tie restraint in the welded stretch and by the joint bars at the ends.

In my opinion there are certain limitations and requirements in the use of continuous-welded rail across open-deck bridges. By continuous-welded rail, I mean that the welded rail does not merely extend across the bridge but that it continues in both directions for possibly ½ mile or more.

The first and most important requirement regarding welded rail is that it is laid at the proper temperature. To do otherwise would be to set up rail stresses that would be impossible to restrain by fastenings of any type.

For short spans, such as those previously mentioned, there is no serious problem, for we dap the bridge ties over the girders and dap out for rivets when using hardwood bridge ties. The ties are held to correct spacing by means of continuous wood wales on each end and are lagged to each tie. Hook bolts or other devices for holding the tie to the girders are not used because of the short spans. Double-shoulder tie plates with hold-down lags are used and the continuous-welded rail is held to the tie plate by M & L spring-steel clips and not, in any case, by orthodox rail anchors.

Installations of this type have proved successful for the reason that the spans are short and any movement of the rail not restrained by the action of the bridge tie on the bridge girder and that between the welded rail and tie plates is transmitted to the ballasted track off the bridge.

Before installing welded rail across exceptionally long open-deck bridges or trestles, I surely would have to make further studies on the restraining action of the ties and other methods of rail and tie anchorage.

Under all conditions it is necessary to have a well-ballasted track for some distance from each end of the bridge that will prevent any rail movement towards the bridge and, also, will hold any rail movement originating on the bridge.

The advantage of using continuous-welded rail on bridges would be to eliminate rail joints which

might reduce, or entirely eliminate, vibration and shock to the structure. It might also reduce damage to the bridge deck. However, I feel that the advantages gained in this respect are quite negligible. I do feel, though, that for ordinary spans when continuous-welded rail is being laid, it should not be broken, regardless of any consideration of advantages or disadvantages as compared with the bolted joint.

It is a fact that there may be some disadvantages to the use of the welded rail where it may outlive the bridge deck, because there would be a hardship in renewing the bridge ties. It would also be a hardship if a derailment occurred on the bridge that might necessitate replacement of the deck.

It is questionable, therefore, whether the disadvantages of the use of continuous-welded rail across bridges might offset the advantages gained by the elimination of joints on the bridges. So far as I know, our experience of practically 20 years has been entirely satisfactory.

Welded Rail Reduces Impact

By Assistant Engineer

Continuous-welded rail in track requires adequate anchorage to restrain the forces set up by temperature changes occurring in the rail. In a stone-ballasted bridge deck this restraint is provided by keeping the cribs practically filled with ballast, by installing sound ties, by using sufficient rail anchors, and by the use of plate and gage spikes in tie plates.

The use of continuous welded rail is desirable on bridges to eliminate pounding which accompanies battered joints. This is not so much a problem on bridges with stone-ballasted decks as it is on open-floor bridges.

On the latter type of bridge the welded rail should be heavily anchored at the land ends of the bridge. Expansion of the steel bridge spans will not affect the alinement of the track if the travel is made independent of the rail. Where rail stops have been used similar to those used on movable spans, serious crushing of the ties has been observed.

Many instances of welded rail are found where the rail is carried directly on steel-floor bridges. Bolts are welded to the deck and to these are attached clips for holding down the rail. Generally the rails are laid on tie pads or similar resilient materials which deter abrasion and cut down noise. This type of fastening is used in non-signaled territory.

Has Proved Effective

By R. W. Torbert

Manager, M. W. and Construction Departments, Oxweld Railroad Service Company, Chicago

More than 10 years ago the American Railway Engineering Association made a special study of impact as it related to both open-deck and ballasted-deck bridge spans. It reported one of the conclusions of this study as follows: "It is evident from these tests that a material reduction in total impact in short-span bridges can be obtained by reducing the rail-joint impact through the use of continuous rails or welded joints on the span." Many installations made since that time attest to the soundness of this conclusion.

There are a number of additional reasons why continuous rail is desirable on bridge structures. A few of these are: (1) Reduction of vibration in the bridge members, particularly on pin-connected structures. (2) Reduction in maintenance of bridge ties and timbers. The elimination of rail joints removes the necessity of replacing or half-soling ties or timbers damaged by mechanical wear at joints. (3) Elimination of any hazards connected with rebuilding battered joints.

The preparation of the continuous rail need not be at the site of installation. Many roads now incorporate such work with programs for welding tunnel, station and crossing rail, thus reducing the unit cost of production. Improved methods of transporting long rails fully justify such action.

Reduces Bridge Maintenance

By A. C. Johnson

Engineer of Design, Elgin, Joliet & Eastern, Joliet, Ill.

The ultimate decision as to whether or not to use welded rail rests with the individual characteristics of the structure under consideration. We have installed continuous-welded rail on bridges where the location falls within the limits of a rail-renewal program employing this type of track structure. Here the decision does not rest on benefits to the structure but there is a noticeable improvement in bridge action under traffic and therefore it is reasonable to expect a reduction in bridge maintenance. We have also installed continuous welded rail on movable bridges to minimize rail creepage. This has definitely helped to maintain proper clearance on rail locks.

Conditions which exist on our road are not necessarily applicable to large trunk-line systems as all of our bridge structures fall within a radius of 100 miles from our central location at Joliet, Ill. Therefore our structures, perhaps, receive closer inspection than they would if more isolated. In like manner, when battered rail joints are encountered it does not require a great deal of time or expense to have these conditions corrected by our track welders.

But, like most roads, we do have certain structures that are suffering from age and light "E" ratings. The weakness of these structures is evidenced by loose rail clips, loose rivets and, in some instances, fatigue cracks in web stiffeners and gussets. Under these conditions, I believe the expense is justifiable.

As a side light I may add that in my observations of bridges under load there exists a condition which I believe contributes more to bridge deterioration than the physical condition of the rails. This is the condition of the track approaching the structure. Natural conditions seem to produce a settlement of the roadbed back of bridge abutments allowing the full impact of locomotives to strike the bridge while the bridge itself is under practically no load. In like manner a high track would cause locomotives to "fall" onto the bridge. This is an item to be noted during bridge inspections.

It is, therefore, my personal contention that existing structures built in recent years for E-70 or E-72 loadings will not suffer from an occasional battered joint and therefore the cost of isolated welded rail renewal cannot be justified. However, as stated above, old structures which suffer from excessive vibration, and therefore excessive maintenance, would benefit from continuous-welded rail. Contrary as it may seem, when new structures of sufficient length are designed, I feel the best available track structure should be employed and the slight increase in cost of welded rail would be justified.

Spring-Frog Wing-Rail "Hold-downs"

What are some of the ways of fastening spring-frog wing-rail "hold-down" devices to the frog plates? What are the advantages and disadvantages of each? Which is best? Explain.

A.R.E.A. Plans Good

By A. F. Huber
Chief Engineer, Ramapo Ajax Division, American Brake Shoe Company, Chicago

Positive means are needed to secure a spring wing rail in a spring-frog so that it cannot be raised sufficiently to permit the outside rim of a trailing wheel tread to engage the side of the spring-rail head, and derail.

Probably the most secure design is that shown on A.R.E.A. Plans 401-51 and 405-51, in which the hold-down housing is inserted into the base plate and plug welded along the bottom. The housing is also welded along its side to the top of the plate, thus providing a very stable and secure attachment.

In these frogs separate hold-down horns are furnished, which are bolted to the spring wing rail and welded, "top, bottom and sides" to its reinforcing strap. A maximum clearance of ¼ in. between the housings and the top of the horns is permitted for assembly and this can be maintained in service because of the secure design. Two hold downs are provided —one on each side of the spring box.

Other acceptable designs of hold-down horns, bolted or riveted to the base plate, are in use, but it generally will be found advisable also to weld the edges of these housings to the plates and thus limit the clearance between the horn and the housing in case the bolts or rivets become loosened.

Weld U-Shaped Ear to Plate

By Wm. G. Hulbert
Vice-President—Engineering, Taylor-Wharton Iron & Steel Co., Easton, Pa.

We have looked over a number of old designs of "hold-down" devices for spring frogs, going as far back as illustrations in "Camp's Notes on Track" published in 1903.

Prior to the application of welding to track structures the hold-down units followed the same general design—namely a U-shaped forging with horizontal ears used to secure it to the base plate. The hold-down to the base plate has bolts or rivets passing through the ears and base plates. The objection to this arrangement appears to be centered in the tendency of the bolts or rivets to loosen, rather than in the design of the forging.

Since the practice of welding the hold-down to the base plate has been used, the same U-type of forging has generally been employed, some times with ears and some times without, as shown on A.R.E.A. Plans 401-51, 405-51, and 407-51.

We do not question the propriety of the earless type if an efficient weld is obtained in each case. However, the potential damage resulting from the failure of a hold-down is such that we prefer an additional safeguard.

The best way to secure a hold-down to the base plate probably has not been discovered as yet, but we believe our method of using a U-shaped forging with integral horizontal ears welded to the base plate on all three sides of each ear, and further secured by the use of bolts through the ears and base plate affords an ample measure of security for present-day conditions.

How Tight Should Ties Be Bundled?

Should the metal bands used in bundling crossties for distribution be applied loosely or tightly? Why? How are the ties distributed in each case? Explain.

Banding Is Never Tight

By R. L. Fox
Division Engineer, Southern, Alexandria, Va.

We have received ties banded both loosely and "tightly." In the first place, there is no such thing as a bundle of ties banded tightly unless it is at the point where they are bundled by being put in a machine, drawn into a round bundle, then straps applied and clamped. It is known that this is not the general practice. Ties generally are bundled ½ tram load to a bundle, and in a square or oblong bundle. When the ties which have been bundled that way are picked up by the bands, the ties then assume a circular position in the bands, causing the bands to become somewhat loose. A great deal will depend, of course, on whether you wish to distribute the ties directly as they are unloaded; whether you unload the ties at some central point and then take them out to where they are to be used; or whether you unload them a bundle at a time out on line of road. Each of these three ways has merits and disadvantages. Personally, from our experience with handling bundled ties, we prefer to set the bundles out along line of road and let them stay there until they are ready to be put in, and then distribute them either from the bundles by use of a crane or distribute them by hand. The decision of which method to use will depend on the number of ties being put in per rail length.

We have had some experience in receiving ties in loose bundles, picking them up with a crane and pulling them out of the bundle with a pike pole as the crane moves along the track. This method has been found to be somewhat difficult. In one instance, we used a pipe cradle in which the bundle of ties was set as it was taken from the car. The crane was then re-hooked to the pipe cradle. This makes it easier to pull the ties off one by one. Ties can be best handled in this manner if in loose bundles.

Most of the railroads receive ties in large quantities. In fact, a good number of roads already have the ties they will install in 1953, or at least have several months' supply. Certainly if one is going to receive ties that far in advance of their application, he would not want to distribute them at the time of receipt. But, if ties are being received in bundles just before use, the application being not over 3 to 4 ties per rail, then it is suggested that they be unloaded with a crane by distributing them from the bundles as the crane moves along the track.

I believe crossties should be given one handling only, i.e. ties should be so scheduled as to come to each division at a time when they can be unloaded either singly or in bundles at or near the place of insertion. To do this, we will have to get a better schedule of

crosstie receipts than is now prevalent on most railroads.

Crosstie handling is something that should be studied and a well-planned program set up, for every time a crosstie is handled it takes labor, which adds to the actual cost of crosstie installation.

Loose Bands Are Best

By J. D. Boyer
Chief Field Engineer, Brainard Steel Division, Sharon Steel Corporation, Warren, Ohio

We feel very strongly that the greatest advantage in handling crossties by means of heavy-duty steel bands is gained from the use of slack or loose bands. Our reasons for this are as follows:

(1) *The ease of making bands into loops before time of application.* With the use of slack or loose bands the loops can be prepared any time in advance of the shipping date. They do not have to be made up at the point of application, but may be prepared in less congested areas and taken to the dock when loading time arrives. A table has been devised for holding the sealing tool in operating position easier. Because of the uniform size of a bundle of ties, controlled by retort size, these loops can be made well in advance and stored for rush times when manpower is not available.

(2) *Time to bundle held to a minimum.* Slack bands are placed in position for lifting merely by separating the tram loads and slipping the bands into position from the ends. This requires no more time than to place chains or cables around the tram load in order to make a lift.

(3) *Less time used for crane hookup.* With slack or loose bands the roller-type hook developed for the specific purpose of handling ties may be employed. This permits "hooking in" at any point around the bundle. When the crane starts to lift, the hooks travel on the band to a central or fulcrum point before the bundle is raised into the air. Use of the roller hooks eliminates friction between band and hook which can, as repeated tests have shown, cause the entire bundle to roll, upsetting the tram and, in some instances, throwing it several yards away from the track.

(4) *Slack or loose bands permit the bundles to spread when placed in railroad cars.* Many of the treating plants have cylinders of such diameter that if bundles are held in shape, the top several rows of the bundle would be above the side of the car. Regulations require that not over one half of the individual tie protrude. The slack bands permit the ties to settle and spread, thus becoming a legal load.

(5) *Hook-up time by crane for unloading held to a minimum.* As mentioned in Item 3, the use of the roller hook permits the "hooking in" at any point without worry of "balance" in the lift. Ties return to nearly the same shape bundle as when originally lifted from the tram.

(6) *Permits choice of unloading and distributing by either bundles or by individual tie.* Loose bands permit a change to be made in method of distribution at any time. Cars may be unloaded by the bundle method and placed along the track at designated intervals. They may then be picked up again at a later date and distributed tie by tie.

In using tight bands, as opposed to the loose bands, many of the above features are lost to the user. The major disadvantages of tight bands are:

(1) *More time is required for the placement, tightening and sealing operation.* This procedure should take place after treatment for the best results to be obtained from the treating angle. Tight banding after treatment can be a dirty and unpleasant job and speed is not possible on slippery ties right after treatment. More confusion and delay can be encountered at the loading dock.

(2) *More time is needed in "hooking up" to make the lift from tram to car or car to the roadbed.* Tight bands do not permit the use of the roller hook and require careful placement so that the lift is "balanced." The friction build up on the type of hook necessary for lifting by tight bands will, if not centered correctly, overturn the tram.

(3) *Large diameter tram loads must be divided.* When using tight bands on lifts where the diameter of the lift is greater than the wall height of the car, it becomes necessary to split the tram with dividers. The application of tight bands then requires two lifts to empty the tram. More material and time required.

(4) *Ties must be distributed in bundles.* Use of tight bands prevents distribution of single ties from a bundle.

Slack or loose bands permit the use of two methods of distribution. The bundles may be unloaded directly to the roadbed. These may later be picked up and distributed by the single-tie method. The single-tie method is accomplished by suspending the bundle of loose banded ties along side the car by means of a double spreader lift. This permits one tie at a time to be pulled from the bundle as the train moves along. These ties drop parallel to the rails at designated points of installation. Single tie distribution is used in many instances as a direct means of unloading. Using the tight bands does not permit a single tie distribution. Bundles must be placed on the roadbed, broken open, and taken to point of installation by hand truck.

Always Use Loose Bands

By General Track Supervisor

When handling crossties in bundles which are banded with two steel bands, it is important that the bands be applied loosely. Perhaps the main reason for this is that, with our method of unloading from a work train by use of a crane, the hooks can be readily secured under the bands. This makes the operation simple and cuts down the unloading time. By applying the bands loosely the ties can be easily removed after the bundles are distributed and the bands can be reused for reloading the ties that have been removed from the track if it is desired to salvage them for any purpose.

New ties are banded at the creosoting plant in bundles of 21 ties. Seventeen of these bundles are placed in a gondola car. Ties are then moved to a designated point.

A work train or local freight then is used to distribute the ties with a crane and a four-man section crew. Previously the section foreman has marked and counted the ties that are to be removed from the track and, by use of stick markers, has designated where each bundle is to be placed. This reduces to the minimum the amount of ties that have to be shifted and locates the bundles as nearly as possible to the point at which the ties are to be installed.

There are three advantages in banding and distributing ties by this method: (1) The ties are unloaded and placed along the track without bruising or splitting them; (2), four men will unload a car of ties where tie renewals are heavy in 30 min., thus producing a saving in labor and handling costs; and (3) it is a much safer method than unloading by other means.

These opinions are my own and are borne out by tests we have made. We have not gone into this on a wholesale scale for we do not have the cranes to tie up in this type of work. We are still testing and trying out different methods, but this seems to be the best.

Liquid-Level Controls for Water Tanks

What are the comparative advantages of various types of liquid-level controls for water tanks situated in climates subject to subfreezing weather? Explain.

Several Good Methods Used

By E. R. Schlaf

Assistant Superintendent, Water Service, Illinois Central, Chicago

My discussion of this question will be confined to liquid-level controls which actuate pumping units. The conventional float switch installed in the usual manner is often subject to failure due to freezing of the water at the surface, freezing of chains on pulleys, and freezing of the switch shaft in the bearing. Air temperature, water temperature, relative humidity, frequency of refilling the tank, and location of the switch all play a part in the failure.

To overcome this difficulty wherever it does occur, other methods of liquid-level control are employed. One of these is the probe type of control which utilizes two electrodes suspended in the water. A high-voltage, low-amperage current is used through these electrodes to trip a relay which controls the pump. A third electrode may also be added for a low-water alarm control. To eliminate ice hazards the probes are enclosed in a 2-in. pipe, slightly vented at the top, open at the bottom, into which is poured a measured quantity of kerosene, amounting to a foot or so in depth in the pipe. The kerosene is a non-conductor, so the probes must be lengthened accordingly. The 2-in. pipe should be trapped at the bottom to avoid loss of kerosene when the tank is drained.

Another method is to install an 8-in. or a 10-in. pipe inside the tank, open at both ends and trapped at the bottom, in which the float moves. The upper foot contains kerosene or light oil or a combination of the two. In this case adequate precautions must be taken to eliminate a fire hazard.

Another method is to use a pressure switch at the pump and install a float valve in the tank. When the water level reaches a predetermined point the float valve gradually closes, building up a head which gives a more precise cutoff point than the pressure switch operating alone. This method is particularly useful on long lines.

The probe type of control is unusual in that a line break on the probe circuit will cause the pump to start. This should be taken into consideration if the tank is located close to tracks.

Use of Metal Buildings on Railways

What are the advantages of metal buildings for maintenance-of-way use? How do they compare in economy, ease of erection, and serviceability with buildings constructed of wood or other materials? Explain.

Now Have Many Advantages

By General Building Supervisor

For certain railroad purposes, there are definite advantages in favor of metal buildings over those constructed of wood or other materials. They are particularly well suited to the transition from steam to diesel locomotives, especially if the metal buildings are of a type that can be taken down and re-erected.

Manufacturers are now producing such salvageable structures in units that can be assembled into buildings of almost any width and length, and in several different heights. They can even be obtained with insulation if desired. These buildings do afford opportunity for reuse in other locations and can be reused as is or can be shortened or lengthened by omitting or adding standard panels. They not only can be provided at a saving in cost and can be erected more quickly, but they afford flexibility for reuse.

If kept painted, such buildings should have a good potential life when not subject to a combination of moisture and sulphurous gases. During the steam-locomotive era this consideration deterred their extensive use for railroad purposes.

The one disadvantage of this type of building is that it may not always be possible to locate all doors and windows to suit all particular conditions. There are also some limitations as to size of doors and windows that can be used.

Can Be Salvaged for Re-use

By W. B. Roof

Railroad Sales Engineer, Armco Drainage & Metal Products, Inc., Middletown, Ohio

Metal buildings of the interlocking rib, panel-type construction offer a number of advantages in maintenance-of-way service. These advantages can be classified under the general headings of low annual cost, short time to put in use, great serviceability, and incombustibility.

Let's look first at the matter of cost. Too frequently we are prone

to consider only the purchase price of the material when in fact a number of other factors enter into the real cost of a building. Actually it can be shown that the total cost of metal buildings is often considerably less than that of similar frame buildings when considered over the entire amortization period, even though the material cost may have been higher. This is true for three principal reasons: (1) Lower cost of installation; (2) less maintenance; and (3) longer service.

In metal buildings, the design and engineering work have largely been done by the manufacturer. One orders such a building to meet exact needs, much as one would order an electric motor or other tool.

On the site, there is no need for an elaborate foundation—no piling or heavy timbers. A simple concrete slab is generally sufficient and it will serve also as a floor. The panel type of construction simplifies erection. There are fewer pieces to handle and put together as contrasted with, say a frame building. Regular maintenance-of-way forces can do all the work. Insulation, plumbing and the like, go in the same as in any ordinary type of construction. These savings combine not only to provide considerable initial economy, but also afford earlier use of the structure.

Now let's consider the maintenance aspects of these buildings. They obviously cost less to paint due to the lower rate of paint absorption of metal. If damage occurs, they are readily repaired simply by replacing a panel or two. Naturally, metal structures are termite proof.

Lastly, consider the matter of service life. We often talk of the life of a building, but in practice few buildings ever "wear out." Rather, they become obsolete. Many hundreds of perfectly sound buildings have been abandoned simply because they were no longer needed at the particular location.

In such cases metal-panel buildings have special advantages. They can be quickly dismantled—all parts salvaged—and then re-erected at another site without loss of strength or tightness.

Any discussion of metal buildings should not be closed without a word on appearance. Clean lines inherent in the structure plus the overall ease of upkeep mean that such buildings are readily kept clean and neat. Thus they contribute to the overall good appearance of any railroad right-of-way.

PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices

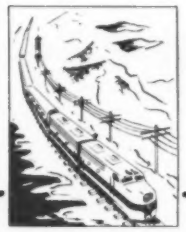
FOUNDATION BORER FOR UNREINFORCED FOOTINGS

THE Foundation Borer, an optional and convertible attachment, manufactured by Gar Wood Industries, Wayne, Mich., for use with Gar Wood shovels, performs what the manufacturer calls a "hole-in-one" operation in excavating for unreinforced type footings. The unit consists of a digging bucket mounted on a crane. This bucket, started into the ground through a starting ring, is rotated causing the cutting blades on the bottom and sides of the bucket to guide soil into the bucket. When full, the bucket is raised and swung away from the hole where it is dumped by opening the bottom doors and belling vanes. Belling of holes is accomplished by opening the side vanes at any desired depth, causing the blade on the vanes to trap the dirt into the bucket. As soon as the boring operation is completed, concrete can be poured into the belled hole to await steel construction. No backfilling is required.

LIGHT WEIGHT PORTABLE SCYTHE

THE SCYTHETTE, a power-driven portable scythe, manufactured by Hoffco, Inc., Richmond, Ind., for trimming weeds, reeds and grass on all types of terrain and under water, now features several new engineering developments. Foremost among these new features are the 2-hp., 4,000 r.p.m. engine of the single-cylinder, 2-cycle, 2-port type, a float-feed carburetor with a built-in push-button dump valve, a manually-operated throttle control with spring return, and a one-quart capacity gasoline tank. Other standard specifications of the Scythette include a total weight of 26 lb., a length of 54 in., a 20-in. cutter bar, and an over-the-shoulder carrying strap. The improved model has also changed colors and is now painted a brilliant highway yellow with red trim.

THE SCYTHETTE, a portable power-driven scythe, is shown here employed cutting a heavy stand of weeds. The unit, which weighs 26 lb., is guided by the operator grasping the machine by its two handles as the entire weight of the device is on the shoulder straps.



THE MONTH'S NEWS...

. . . among railway men—the associations—the suppliers

Changes in Railway Personnel

General

Joshua A. Curtis, trainmaster on the Baltimore division of the Baltimore & Ohio, with headquarters at Baltimore, Md., and formerly assistant division engineer at Baltimore, has been appointed assistant superintendent of the Monongah division at Grafton, W. Va.

William T. Elmes, superintendent of the Pittsburgh & Lake Erie and an engineer through training and experience, has been promoted to general manager with headquarters as before at Pittsburgh, Pa., succeeding **Charles G. Stewart,** also a former engineer, who has retired after some 40 years of railroad service.

David E. Smucker, former director of the Defense Transport Administration and assistant chief engineer of the Pennsylvania, has been elected president of the Detroit, Toledo & Ironton with headquarters at Dearborn, Mich., succeeding **S. P. Ruddiman,** who has retired.

Engineering

Somers H. Smith, assistant engineer on the Milwaukee Road at Chicago, retired December 31 after 40 years of service.

A. B. Pierce, engineer of water supply, Southern, with headquarters at Washington, D. C., has retired, effective January 1, after more than 50 years of service with this road.

W. J. Strout, chief engineer and acting mechanical superintendent of the Bangor & Aroostook at Houlton, Me., has been appointed chief engineer and mechanical superintendent. **P. H. Swales,** assistant engineer, has been promoted to principal assistant engineer to succeed **R. H. Morrison,** who has been promoted to assistant chief engineer.

Albert A. Cross, division engineer of the Hartford division of the New York, New Haven & Hartford, has resigned to accept the position of manager of tie pads for Bird & Son, Inc.

R. B. Birkett, supervisor of track on the Illinois Central at Ft. Dodge, Iowa, has been promoted to assistant to division engineer at Carbondale, Ill., succeeding **A. A. Logue,** who has retired.

R. D. Igou, instrumentman on the Chicago Rock Island & Pacific at Liberal, Kan., has been promoted to resident engineer at Hutchinson, Kan., succeeding **William Ware.** Mr. Ware has been promoted to division engineer at Little Rock, Ark., replacing **H. M. Long,** whose death is noted elsewhere in these columns.

R. W. Orr, supervisor of bridges and buildings on the New York Central at Corning, Ohio, has been promoted to assistant division engineer of the Ohio Central division, with headquarters at Columbus, Ohio, succeeding **W. H. Goold,** who has been transferred to the Erie division at Erie, Pa. Mr. Goold succeeds **H. L. Riser,** who has been transferred.

O. M. Miles, statistical engineer for the Norfolk & Western, has been appointed office engineer with headquarters as before at Roanoke, Va., to succeed **C. W. Noel,** who has retired after more than 52 years of service. **A. C. Walker,** engineer in the statistical bureau, has been promoted to statistical engineer to succeed Mr. Miles.

D. T. Yeats, superintendent of a heating plant on the Seaboard Air Line at Hull, Fla., has been appointed assistant engineer on the Alabama division with headquarters at Americus, Ga. **J. J. Vereen, Jr.,** assistant engineer on the Virginia division at Raleigh, N. C., has been transferred to the South Florida division at Tampa, Fla.

Oscar C. Benson, assistant division engineer on the Boston & Maine at Concord, N. H., has been promoted to division engineer of the Terminal division with headquarters at Boston to succeed **Raymond H. Mitchell,** deceased. **Richard E. Sampson,** supervisor of track at Greenfield, Mass., has been advanced to assistant division engineer on the New Hampshire division at Concord to succeed Mr. Benson. **J. F. Kerwin** has been appointed assistant engineer of design at Boston and **Warren K. Hale** has been named assistant engineer on the Fitchburg division at Greenfield.

T. L. Kanan, roadmaster on the Chicago, Burlington & Quincy at Kansas City, Mo., has been promoted to assistant engineer of track of the Colorado & Southern and the Ft. Worth & Denver (units of the Burlington Lines) at Denver, Colo., succeeding **J. R. Kanan,** who has been promoted to district engineer, maintenance of way, Eastern district, of the Burlington, with headquarters at Galesburg, Ill. The latter Mr. Kanan succeeds **A. G. Reese,** who has retired.

W. R. Garner, division engineer on the Pennsylvania-Reading Seashore Lines and the Atlantic division, of the Pennsylvania at Camden, N. J., has been transferred to the Susquehanna division at Williamsport, Pa., succeeding **P. S. Settle** who, as announced in the December issue, has been transferred to the Eastern division at Pittsburgh, **J. M. Minturn, Jr.,** assistant division engineer on the Middle division at Altoona, Pa., has been promoted to division engineer at Camden to replace Mr. Garner. **M. B. Miller,** supervisor of track at North Philadelphia, has been advanced to assistant division engineer at Altoona to succeed Mr. Minturn. **H. P. Morgan,** assistant division engineer on the Columbus division at Columbus, Ohio, has been promoted to division engineer on the Lake division at Cleveland. **C. F. Montague,** supervisor of structures on the Atlantic division, has been promoted to assistant engineer, office of chief engineer maintenance of way, Eastern region, at Philadelphia.

A. R. Penny, assistant district engineer for the Newfoundland district of the Canadian National, has been appointed division engineer, with headquarters as before at St. John's, N. F. **F. M. Kennedy,** assistant engineer for that district, has been appointed assistant division engineer at St. John's.

Prior to entering railway service, Mr. Penny was engaged in land survey work for the Newfoundland government. He entered the engineering department of the CNR in 1938 and rose to the post of assistant engineer, maintenance of way. In 1949 he was appointed assistant district engineer.

Mr. Kennedy was born at St. John's and studied engineering at Memorial University College between 1940 and 1942. He also took an ICS course in railroad engineering. He entered the service of the CNR as a junior engineer in 1942, and was named assistant engineer for the Newfoundland district in 1949.

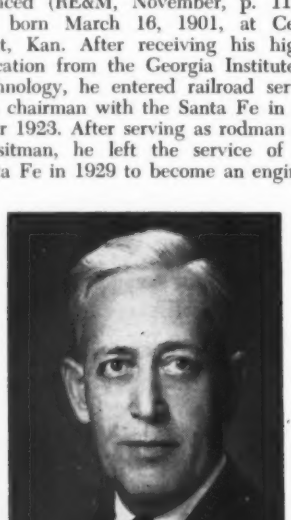
A. M. Schofield, who has been appointed assistant division engineer on the Pennsylvania at Williamsport, Pa., (RE&M, November, p. 1110) was born at

(*Continued on page* 72)

Railway Personnel (Cont'd)

Philadelphia, Pa., on July 16, 1914. Prior to graduation from Drexel Institute of Technology with the degree of Bachelor of Science in Civil Engineering in 1937, he was employed by the Pennsylvania as an electrician's helper from September 14, 1936, to January 1, 1937. The following August he was appointed an engineer apprentice at Rochester, Pa., and on February 1, 1939, was advanced to assistant on the engineering corps, in which capacity he served consecutively at Aspinwall, Pa., Johnstown and East Liberty, Pa., Carnegie, Pa., and Philadelphia. On March 24, 1941, Mr. Schofield was promoted to assistant supervisor of track at Niles, Ohio, transferring to Canton, Ohio, the following year. From November 1, 1943, to May 1, 1946, he was furloughed for military railway service in Europe. Upon his return to the railroad he was appointed supervisor of track at Niles, and later held that position at Lancaster, Pa., where he remained until August 22, 1950, when he was again furloughed for military railway service in Korea. Following his discharge from the army on June 20, 1952, he returned to the Pennsylvania as assistant division engineer on the Susquehanna division at Williamsport.

Dwight E. Perrine, whose promotion to assistant chief engineer of the Chicago & Western Indiana and Belt Railway Company of Chicago was recently announced (RE&M, November, p. 1110), was born March 16, 1901, at Cedar Point, Kan. After receiving his higher education from the Georgia Institute of Technology, he entered railroad service as a chairman with the Santa Fe in October 1923. After serving as rodman and transitman, he left the service of the Santa Fe in 1929 to become an engineer



Dwight E. Perrine

with the Illinois Bell Telephone Company. From 1933 until 1944 he was employed as an engineer by the Ready Coal & Construction Co., and in the latter year accepted an engineering position with Griffenhagen & Associates, Chicago. In 1946 Mr. Perrine re-entered the railroad field and served until October 1948 as an assistant engineer on the Chicago South Side Railway Terminal Commission. He then entered the service of the C&WI and the Belt Railway as an assistant engineer, advancing to office engineer in January 1951—the position he held at the time of his recent promotion.

John J. Richardson, who has been appointed district engineer on the Canadian Pacific at St. John, N. B., (RE&M, November, p. 1110) was born in Scotland on September 9, 1890. He was articled to a firm of consulting engineers in Motherwell, Scotland, in 1907, and studied at Glasgow Royal Technical College. Entering the employ of the CPR in May 1913, Mr. Richardson served as a draftsman and building inspector at North Bay, Ont., until August 1915, at which time he went overseas with a railway battalion in World War I, working on railway surveys and construction in France and Belgium. On his discharge from the Army in May 1919, he became transitman at Schreiber, Ont., and later assistant engineer at Toronto. In August 1938 he was appointed division engineer at Toronto, and two years later moved to Kentville, N. S., with the engineering department of the Dominion Atlantic. Mr. Richardson was transferred to Montreal in April 1946, and the following year was named engineer in charge of construction of the St. Luc freight terminal. In 1951 he took over as supervisory engineer of the construction of the new express extension at Windsor station, the position he held at the time of his recent appointment.

John J. Richardson

John J. Clutz, assistant chief engineer of the Eastern region of the Pennsylvania, with headquarters at New York, has been appointed assistant chief engineer of the system at Philadelphia. Mr. Clutz was born on June 30, 1904, at Carthage, Ill., and graduated from Gettysburg College in June 1924. He entered railway service on June 15 of that year, doing construction and location work for the Louisville & Nashville, and later served in the valuation department of the New York Central. He joined the Pennsylvania on June 1, 1926, as a rodman, and subsequently held the positions of assistant supervisor of track and supervisor of track at various locations on that railroad. In August 1939 Mr. Clutz was promoted to assistant division engineer of the New York division, and in February 1940 he was advanced to division engineer of the Indianapolis division, later becoming engineer maintenance of way and structures of the Washington Terminal Company, Washington, D. C. Furloughed for military service in April 1942, he served in the Military Railway Service until January 1946, when he was discharged from the army with the rank of colonel. Upon his return to the Pennsylvania, he was appointed division engineer on special duty in the office of the chief engineer at Philadelphia. In 1948, following temporary active duty in the army as deputy director of the Allegheny region, Department of the Army Operation of Railroads, with headquarters in Baltimore, Md., Mr. Clutz was named assistant to the chief engineer of the Eastern region at Philadelphia. He was advanced to the position of assistant chief engineer at New York on September 1, 1949.

John J. Clutz

Track

K. Z. McGill has been appointed roadmaster on the Chicago, Burlington & Quincy at Kansas City, Mo., succeeding **T. L. Kanan** who, as noted elsewhere in these columns, has been promoted to assistant engineer of track at Denver, Colo.

W. W. Westerfield has been appointed assistant roadmaster on the Chicago, Milwaukee, St. Paul & Pacific, at Missoula, Mont., succeeding **T. A. Prata.** Mr. Prata has been promoted to roadmaster at Missoula succeeding **H. W. Spears,** who has retired.

Walter S. Clement, assistant roadmaster on the Pulaski district of the Norfolk & Western has been appointed roadmaster of the Durham district at South Boston, Va., succeeding **C. P. Yost,** who has retired after 50 years of service. **J. J. Kendrick, Jr.,** inspector in the office of the manager of roadway maintenance at Roanoke, Va., has been appointed assistant roadmaster at Pulaski, Va., to succeed Mr. Clement.

Thomas L. Biggar, who has been appointed supervisor of track on the Chesapeake & Ohio at Covington, Ky. (RE&M,

(*Continued on page* 74)

Look at the many advantages multi-purpose Macbeth Spike Anchors have over other types of rail fasteners

REDUCES MECHANICAL WEAR:

4 Macbeth Spike Anchors clamp rails, tie and tie plates solidly together with a force of approximately 4½ tons. No hold down spikes or conventional wear-resistant devices required because *the tie plates can't shift.* Mechanical wear is reduced because there is no relative motion between the tie and tie plates.

REPLACES CONVENTIONAL SPIKE AND ANCHOR:

Macbeth Spike Anchors drive into the ties through the line spike holes of standard tie plates. *Every* Macbeth is immediately effective when fitted and *stays* that way. They hold the rail with a grip far exceeding the resistance of the ballast...and stop creep *both ways.*

NO MAINTENANCE:

Macbeth Spike Anchors when properly driven require no maintenance...because *they won't work loose.*

REDUCES IMMEDIATE AND LONG-RANGE COSTS:

4 Macbeth Spike Anchors per tie do the job of line spikes, hold downs and at least 2 conventional anchors (*4* when 2-way holding is needed)...and you don't need wear-resistant devices. Macbeths cut maintenance...and since they reduce wear, your tie renewal costs come down, too.

for facts, figures and comparative costs, write for Bulletin C.

H. T. KENNEDY COMPANY, INC. • 37 WALL STREET • NEW YORK 5, N. Y.

November, p. 1118), was born at Trinity, Ky., on May 5, 1909, and began his railroad career with the C&O as a section laborer on the Cincinnati division on May 16, 1925. He subsequently served as assistant foreman, signal helper, assistant signalman, section foreman and assistant cost engineer. On October 1, 1951, Mr. Biggar was appointed acting supervisor of track on the Chicago division, returning to the Cincinnati division as assistant cost engineer on February 1, 1952, which position he held at the time he received his recent promotion.

Winfred L. Thornton, assistant supervisor of track on the Southern at Columbia, S. C., has been promoted to supervisor of track at Greenwood, S. C., to succeed **Marvin E. Wilson, Jr.,** who has been transferred to Batesburg, S. C. **Dennis L. Martin,** extra gang foreman on the Knoxville division, has been promoted to assistant supervisor of track at Cordele, Ga.

Mr. Thornton was born at Winston-Salem, N. C., on July 9, 1928, and entered the service of the Southern as a student apprentice at Manassas, Va., in June 1950. He was advanced to assistant supervisor of track at Chester, S. C., in August 1951, and was transferred to Columbia in January 1952.

Thomas Burrell, Jr., who has been promoted to supervisor of track on the New York Central at Corning, N. Y. (RE&M, November, p. 1116), was born at Amsterdam, N. Y., on October 19, 1927, and was graduated in civil engineering from Clarkson College of Technology in 1947. He began his railroad career with the New York Central as a rodman on the Electric division at New York on July 28, 1947, and a year later was appointed a transitman on that division. On October 1, 1949, Mr. Burrell was promoted to assistant supervisor of track, and served in that capacity consecutively at Brewster, N. Y., and Albany, N. Y., where he remained until he received his recent appointment as supervisor of track.

Thomas J. Vansandt, roadmaster on the Southern Pacific at Roseville, Cal., has been promoted to general track supervisor with headquarters at San Francisco.

Joseph A. Frost, general foreman on the Erie at Youngstown, Ohio, has been appointed supervisor of track at Warren, Ohio, to succeed **John Reilby,** who has retired after 26 years of service.

R. L. Dankbar, assistant supervisor of track on the Louisiana division of the Illinois Central, has been promoted to supervisor of track at Freeport, Ill., succeeding **H. L. Read,** who has been transferred to Rockford, Ill. Mr. Read succeeds **G. W. Shafer,** who has been transferred to Ft. Dodge, Iowa, succeeding **R. B. Birkett** who, as noted elsewhere in these columns, has been promoted to assistant to division engineer at Carbondale, Ill.

Changes on the Pennsylvania

V. B. Siems, supervisor of track on the Delmarva division of the Pennsylvania, has been transferred to the Middle division, succeeding **D. E. Pergrin. J. G. Wilson,** supervisor of track on the Southwestern division at Anderson, Ind., has been transferred to the Delmarva division, succeeding Mr. Siems. **W. C. Wieters,** assistant supervisor of track on the Philadelphia division at Enola, Pa., has been transferred to the Philadelphia Terminal division, succeeding **J. L. Lockhard,** who has been promoted to supervisor of track on the Pennsylvania-Reading Seashore Lines at Tuckahoe, N. J. **B. F. Overbey, Jr.,** junior engineer on the Pittsburgh division, has been promoted to assistant supervisor of track at Enola to succeed Mr. Wieters.

H. I. Payne, junior engineer on the Maryland division, has been promoted to assistant supervisor of track on the Susquehanna division, succeeding **R. H. Neeley,** who has been transferred to the Panhandle division at Coshocton, Ohio, succeeding **E. S. Bell, Jr.,** who has been promoted to supervisor of track on the Panhandle division at Carnegie, Pa., succeeding **D. H. Cushwa,** who has been transferred to the Northern division. **W. J. Baetz,** junior engineer on the Cincinnati division, has been promoted to assistant supervisor of track on the Maryland division at York, Pa., succeeding **T. T. Connelly,** who has been transferred to Washington, D. C. **W. B. Super,** supervisor of track on the Fort Wayne division, has been transferred to the Philadelphia Terminal division at Reading, Pa. **W. K. Mangum, Jr.,** supervisor of track on the Philadelphia Terminal division at South Philadelphia, has been transferred to West Philadelphia, succeeding **J. W. Harper,** who has been transferred to the New York division. **E. J. Sierleja,** supervisor of track on the Southwestern division at Terre Haute, Ind., has succeeded Mr. Mangum at South Philadelphia. **R. R. McClain,** supervisor of track on the Southwestern division at Terre Haute, has been transferred to the Philadelphia Terminal division at North Philadelphia.

W. B. Newell, assistant supervisor of track on the Philadelphia Terminal division at Philadelphia, has been transferred to the Middle division, succeeding **D. N. Worfel,** who has been promoted to supervisor of track on the Lake Division. **A. D. Tholen,** Junior engineer on the lake division, has been promoted to assistant supervisor of track on the Panhandle division. **R. V. Young,** supervisor of track on the Southwestern division at Greenville, Ill., has been transferred to the Eastern division, succeeding **C. P. Sipe,** who has been transferred to the office of chief engineer, Central region, with headquarters continuing at Pittsburgh.

Water Service

Paul Prevey, assistant engineer in charge of well drilling operations on the Chicago, Milwaukee, St. Paul & Pacific, retired recently after 46 years of service.

Bridge and Building

G. M. Davis has been appointed supervisor of bridges and buildings, Subdivision 45, Ohio Central division of the New York Central at Corning, Ohio, succeeding **R. W. Orr** who, as noted elsewhere in these columns, has been promoted to assistant division engineer at Columbus, Ohio.

J. A. Campbell, assistant supervisor of structures on the Columbus division of the Pennsylvania, has been promoted to supervisor of structures on the Atlantic division, succeeding **C. F. Montague,** who, as announced elsewhere in these columns, has been promoted to assistant engineer, office of chief engineer maintenance of way, Eastern region, at Philadelphia.

S. G. Wintoniak, who has been appointed supervisor of structures on the Pennsylvania at Altoona, Pa., (RE&M, November, p. 1119) was born at New York on June 6, 1919, and received his B. S. degree in civil engineering from Cooper Institute of Technology in 1941. He entered the employ of the Pennsylvania on June 11, 1941, as a bridge and building engineering apprentice at Jersey City, N. J., and subsequently served in that capacity on the New York division. He was furloughed to enter military service with the U. S. Army on December 9,

(*Continued on page* 78)

ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

Below is a complete index of the products referred to in both the editorial and advertising pages of this issue. If you desire additional information on any of them, use one of the accompanying addressed and stamped postcards in requesting it. In each case give name of product and page number. The information will come to you directly from the manufacturer involved, without any obligation on your part.

Products Index

Six-man car that one man can lift rolls smoothly on TIMKEN® bearings

THIS Kalamazoo 56A utility car can carry a crew of six men and tow a heavy load besides. Yet it's light enough for one man to lift on and off the tracks (rear lift approx. 110 lbs.). Used for patrol, inspection or to carry a work crew, the car rolls smoothly with Timken® tapered roller bearings on the axles.

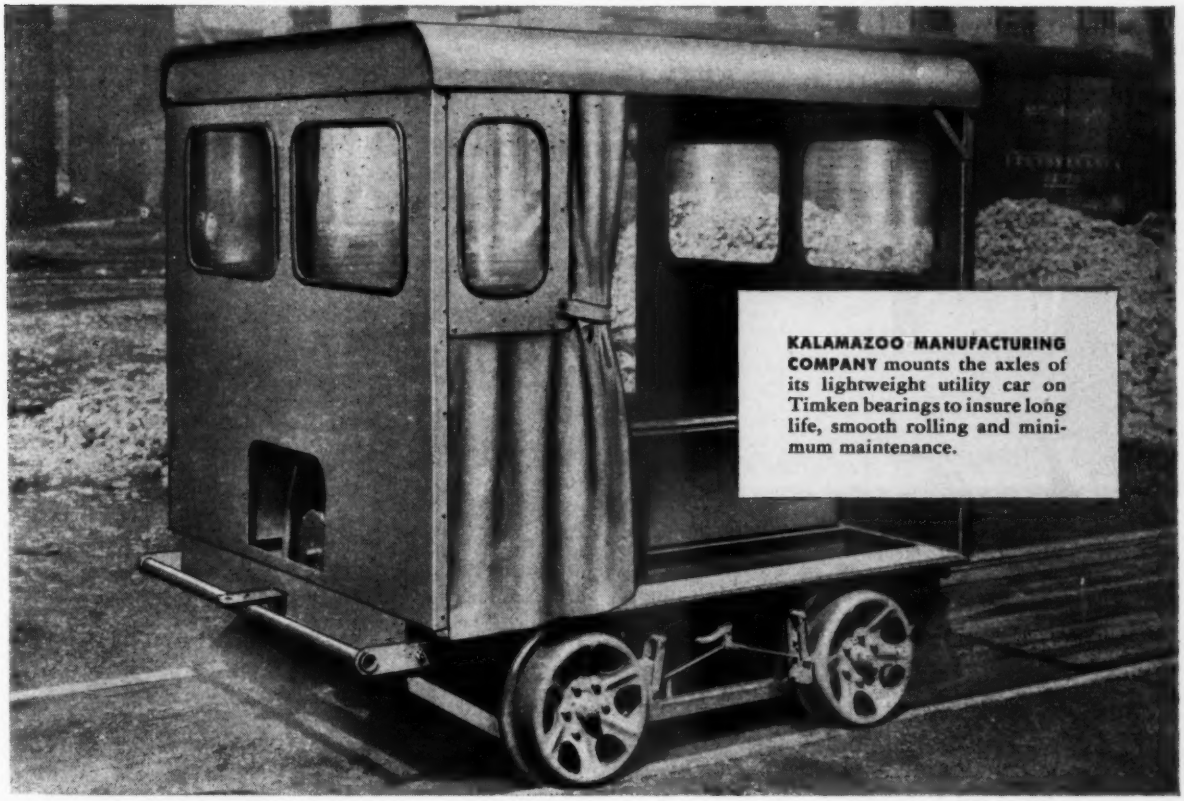
The true rolling motion of Timken bearings plus the smooth finish of their rollers and races practically eliminate friction. Wear is minimized, breakdowns avoided. Wheels turn freely.

Since Timken bearings keep housings and shaft concentric, they make closures more effective. Lubricant stays in, reducing maintenance. Dirt stays out, reducing wear.

Line contact between roller and races on Timken bearings provides load-carrying capacity to spare. They take heavy shock loads with ease, prevent utility car breakdowns on the right of way.

No other bearing can give you all the advantages you get with Timken bearings. Make sure you have them in the equipment you buy or build. Look for the trademark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



KALAMAZOO MANUFACTURING COMPANY mounts the axles of its lightweight utility car on Timken bearings to insure long life, smooth rolling and minimum maintenance.

WE MAKE OUR OWN STEEL

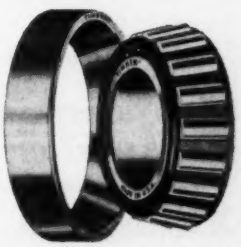
The special grade alloy steel which gives Timken bearings their strength and resistance to wear is made in our own steel mills.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TRADE-MARK REG. U.S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION

Railway Personnel (Cont'd)

1942. Upon his discharge from the army with the rank of 1st lieutenant, Corps of Engineers, on May 28, 1946, Mr. Wintoniak returned to his former position on the New York division, where he remained until October 15, 1947. On the latter date he was appointed assistant master carpenter and held that position consecutively on the Maryland and Philadelphia Terminal divisions. He was recalled into military service on August 18, 1950, with the 724th Transportation Railway Operating Battalion. Following a year's service in Korea, he was separated from the army as a captain in July 1952, and the following month returned to the railroad as supervisor of structures.

Special

Richard E. Franklin, master mechanic on the Southern at Birmingham, Ala., has been appointed superintendent of maintenance equipment with headquarters at Charlotte, N. C.

H. H. Baker, supervisor of the maintenance of way material yard of the Norfolk & Western at Roanoke, Va., has been appointed general supervisor of the timber preserving plant and roadway material yard at Radford, Va., which is a new position.

H. S. Craine, superintendent of work equipment and floating equipment on the Missouri Pacific at St. Louis, Mo., has been appointed to the newly-created position of superintendent of maintenance of way equipment. The position of superintendent of work equipment and floating equipment has been abolished, as has the position of assistant engineer of roadway machines, formerly held by **J. M. Giles** who has left the service of the railroad. Mr. Craine, in addition to his former duties, will handle matters previously assigned to Mr. Giles. **F. E. Yockey** has been named assistant superintendent of maintenance-of-way equipment.

Obituary

Raymond H. Mitchell, division engineer on the Boston & Maine at Boston, Mass., died November 18 at the age of 53.

F. M. Misch, general bridge and building supervisor on the Southern Pacific at San Francisco, died recently.

H. M. Long, division engineer on the Chicago, Rock Island & Pacific at Little Rock, Ark., died recently.

John W. Reed, assistant engineer, Western region, Pennsylvania, died suddenly December 3, in Chicago, of a heart attack.

John H. Rigby, retired general manager and former roadmaster on the Columbus & Greenville, died at London, Tenn., on November 24 at the age of 74.

John Paul Jackson, general superintendent of the Western General division of the Norfolk & Western, and formerly assistant roadmaster on the Radford division, died at Bluefield, W. Va., on November 20, at the age of 50.

Robert E. Oberdorf, assistant to the chief engineer of the Nickel Plate at Cleveland, Ohio, died recently at the age of 60.

Mr. Oberdorf was born December 27, 1891, at Sunbury, Pa., and graduated from Bucknell University in 1915. He began his railroad career in 1916 as an instrumentman for the Toledo, St. Louis & Western at Frankfort, Ind., later serving as assistant engineer and chief draftsman there. In 1937 he was named assistant division engineer of the Lake Erie and Western district of the Nickel Plate at Frankfort, which position he held until 1940 when he was named district engineer of the Cloverleaf district, also at Frankfort. Mr. Oberdorf was promoted to district engineer of the Lake Erie and Western district in 1945, and in 1947 was appointed assistant to the chief engineer at Cleveland, the position he held at the time of his death on December 8, 1952.

W. L. Peoples, district engineer of the Wheeling & Lake Erie district of the New York, Chicago & St. Louis, died on November 7 at Massillon, Ohio, at the age of 56. Mr. Peoples was born on August 12, 1896, at Bolivar, Ohio, and

graduated in civil engineering from Ohio Northern. He began his career with the Wheeling & Lake Erie in 1916 as a rodman. Following service in the army during World War I, he returned to that railroad to become successively roadmaster, supervisor of bridges and buildings and assistant engineer, maintenance of way and structures. He held the latter position from 1941 to 1949, when the W&LE became part of the Nickel Plate system.

Association News

American Railway Engineering Association

Four standing committees of the association have scheduled meetings for the month of January. The Committee on Buildings will meet at the Rice Hotel, Houston, Tex., on January 22 and 23, and the Committee on Records and Accounts will meet in Richmond, Va., on January 21 and 22. In addition, the Committee on Yards and Terminals will meet at the St. Charles Hotel, New Orleans, La., on January 12 and 13. An inspection trip of the new Union Passenger Terminal facilities has been planned. The Committee on Economics of Railway Labor will meet, also at New Orleans, on January 14 and 15 at the International House. An inspection trip over the Union Passenger Terminal has been scheduled for the 15th.

Last-minute attention to all convention plans, to insure their completeness and smooth execution, will be made by the

Association News (Cont'd)

General Arrangements Committee for 1953 at a meeting to be held at association headquarters on January 20.

Early this month, all members will be sent hotel reservation cards, and will be given the opportunity of making advance luncheon reservations for the annual convention to be held March 17-19. Committee chairmen will also be contacted concerning their plans for committee meetings and luncheons.

Bridge and Building Association

Under the direction of President Foster R. Spofford, the Executive committee of the association held a meeting at the St. Charles hotel, New Orleans, La., on December 8 and 9. The principal item of business was the selection of chairmen and personnel for the technical committees which are to prepare reports for presentation at the 1953 convention.

Maintenance of Way Club of Chicago

The club held its December meeting at Eitel's restaurant in the Field Building on December 15. An interesting program was presented describing the design and construction of the Milwaukee Road's new Air Line yard at Milwaukee. K. L. Clark, principal assistant engineer of the Milwaukee, and J. P. Kaysen, assistant superintendent telegraph and signals, were the speakers. A motion picture showing the layout and operation of the facility was also shown.

Metropolitan Maintenance of way Club

The December meeting, held at the Hotel Shelburne, New York, on December 11, was the usual luncheon meeting preceding the annual dinner of the New York Railroad Club. The principal speaker was C. A. Colpitts, assistant chief engineer of the Canadian Pacific at Montreal. In his talk on "Maintenance Problems on Canadian Railways," Mr. Colpitts discussed maintenance-of-way work in Canada with particular reference to methods used to overcome severe winter conditions and also certain standards which do not conform strictly to recommended American or A.R.E.A. practices.

The next meeting of the club will be a dinner meeting at the Hotel Shelburne on February 26, the program for which will be announced later.

Mississippi Valley Maintenance of Way Club

The first regular meeting of this new organization was held on December 8 at the De Soto Hotel in St. Louis. A total of 231 members and guests was in attendance. The principal speaker was George M. O'Rourke, assistant engineer maintenance of way, Illinois Central, who gave an interesting report on his observations of railroads in Germany, which he made during a trip to Europe several years. ago.

The January meeting was scheduled to be held at the De Soto hotel on the 12th, with Lt. Joseph Gallagher of the St. Louis police department as the speaker.

The next meeting will be held on February 9. E. L. Anderson, chief engineer, St. Louis-San Francisco, will be the principal speaker at this meeting. In addition there will be a moving picture showing the damage that was inflicted on the properties of the Southern Pacific in California, especially tunnels, during the earthquake of last July. This picture will also show the extensive rehabilitation work necessary to repair the damage.

Roadmasters' Association

The Executive committee, under the direction of President R. H. Gilkey, met at the Chicago Engineers' Club on December 8. Much of the time of the meet-

(*Continued on page* 82)

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 15-17, 1953, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5

American Railway Engineering Association—Annual Meeting, March 17-19, 1953, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—Annual meeting, April 28, 1953, Cleveland Hotel, Cleveland, Ohio. W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting January 26. E. C. Patterson, Secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York

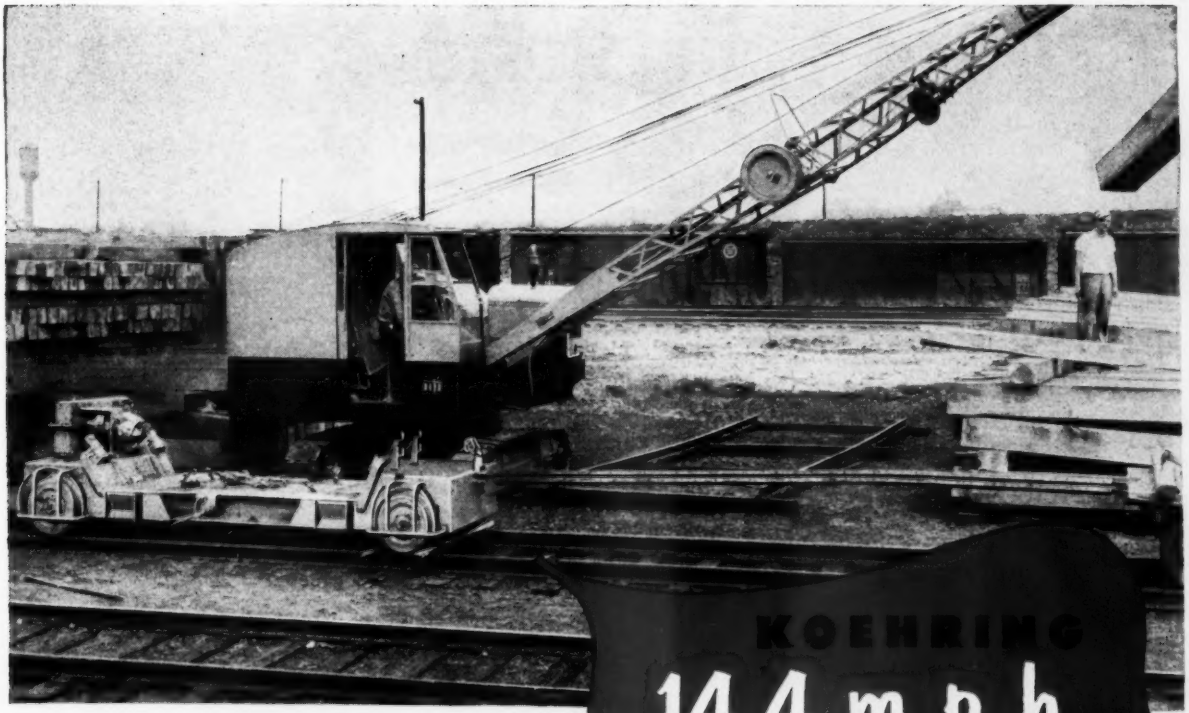
Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive Street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5

Railway Tie Association—Roy M. Edmonds, Secretary-treasurer, 1221 Locust Street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 15-17, 1953, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas Secretary, 59 E. Van Buren street, Chicago 5

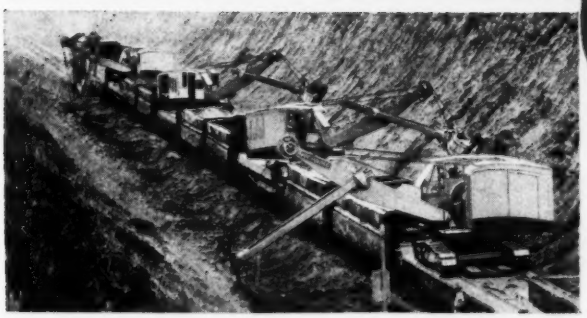


KOEHRING

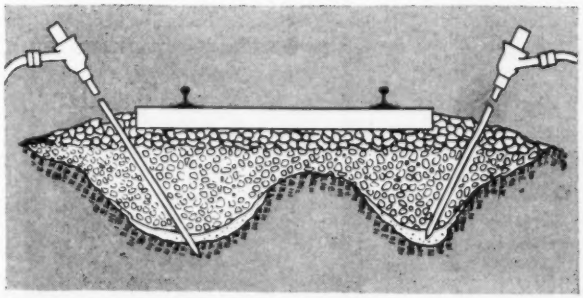
14.4 m.p.h.

RAILAID

works on and off-track



3 LARGER SIZE Koehring excavators have dipper capacities up to 2½ yards . . . lift capacities up to 79½ tons. Heavy-duty ¾-yard 304 (above) safely lifts 13.9 tons on crawlers . . . 25 tons on rubber-tired truck or cruiser mounting. Reserve strength helps protect heavy work schedules against costly down time.



RAILROAD MUD-JACK® . . . Water or ballast pockets in track sub-grade are easily corrected with Koehring Mud-Jack. Injection points are driven below ballast . . . hydraulic pump forces soil-cement slurry into weakened area, stabilizing existing material. Leaves firm sub-grade. Saves labor, reduces "slow orders". Send for Mud-Jack bulletin.

To save you the extra cost of separate on and off-track cranes, Koehring RailAid combines all the advantages of a self-propelled track crane with the versatility of a standard crawler crane. It is self-powered through extended lower traction shaft of crane and universal coupling on rail propulsion car . . . travels forward and reverse at 4 rail speeds up to 14.4 m.p.h.

RailAid loads or unloads itself on ramp-equipped propulsion car in less than 10 minutes . . . sets car on and off-track . . . clears the track for normal traffic. Work of crane and the road crew is uninterrupted for the complete shift. Crane lifts 6.6 tons from car, 8¼ tons from ground . . . loads, unloads rails in yards and along the line, lays rails, places timbers and trusses on bridge construction and repairs, speeds scrap handling and salvage. Standard 30-ft. boom extends to 50 feet . . . readily converts to magnet crane, clamshell, dragline, pile-driver, ½-yd. shovel or hoe.

Full details on Koehring RailAid are covered in fact-packed bulletin . . . write us for your copy.

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Association News (Cont'd)

ing was devoted to the selection of chairmen, vice-chairmen and other personnel for the committees that are to prepare reports on the six subjects selected at the 1952 annual convention. These reports will be presented at the annual meeting in 1953. Preliminary plans for that meeting were also discussed by the Executive committee.

Supply Trade News

Personal

J. M. Giles, assistant engineer roadway machines on the Missouri Pacific at St. Louis, Mo., has resigned to accept the position of railway special representative for the **Caterpillar Tractor Company,** Peoria, Ill. Mr. Giles will make his headquarters at St. Louis.

Albert A. Cross has been appointed manager of tie pads for **Bird & Son, Inc.,** to succeed **John A. Crowe,** who has resigned. Mr. Cross was division engineer for 17 years on the Hartford division of the New York, New Haven & Hartford, and engineer in charge of maintenance of way for the entire New Haven system for three years. He also worked for the William P. Bray Company for a short time and, from May to October of 1952, conducted a survey of the Colombian National Railway System in South America for the Madigan-Hyland Corporation.

Walter P. Arnold, vice-president and executive assistant to the general manager of the Wood Preserving division of **Koppers Company, Inc.,** Pittsburgh, Pa., has been appointed vice-president and general manager of the division, succeeding **Harry R. Condon,** who has retired after 25 years of service with Koppers and associated companies.

Mr. Arnold, a native of Cincinnati, Ohio, was graduated from the University of Cincinnati with a degree in chemical engineering. He joined Koppers as a chemical engineer at its Orrville (Ohio) plant in 1925, and 10 years later was promoted to technical director of the Wood Preserving division. He came to Pittsburgh in 1946 as manager of railroad sales for the division, and in 1950 was promoted to executive assistant to the vice-president and general manager. He was appointed vice-president in 1951. Mr. Arnold, who served as president of the

Walter P. Arnold

American Wood Preservers' Association in 1944 and as president of the Railway Tie Association in 1951, will now be responsible for all wood-preserving activities of Koppers.

A native of Conshohocken, Pa., Mr. Condon was graduated from Pennsylvania State College with a Bachelor of Science degree in forestry. Upon graduation he joined the Pennsylvania as an assistant forester and was engaged in technical

Harry R. Condon

and administrative work with that road for more than 10 years. In 1927 he left the railroad to become vice-president of the American Mond. Nickel Company. Two years later he returned to the wood-preserving field as vice-president of the Century Wood Preserving Company. In 1935 he became vice-president of the

(*Continued on page 84*)

Supply Trade News (Cont'd)

Wood Preserving Corporation which later became a division of Koppers. In 1948 Mr. Condon was given responsibility for Koppers wood preserving activities in the eastern half of the United States, and in 1950 was named vice-president and general manager of the Wood Preserving division. Mr. Condon served as president of the American Wood Preservers Association in 1928.

John Poulter, research engineer for the **Koehring Company,** Milwaukee, Wis., has been appointed chief engineer succeeding **E. O. Martinson,** recently appointed vice-president in charge of engineering.

Douglas Grymes, Jr., assistant manager of railroad sales for the **Wood Preserving division** of **Koppers Company, Inc.,** has been appointed manager of railroad sales.

Harold Perrine has been appointed manager of the Unarco Steel Building division of the **Union Asbestos & Rubber Company,** Chicago.

Fred W. Smith, vice-president of the **Simmons-Boardman Publishing Corporation,** has been appointed business manager of *Railway Track & Structures,* with headquarters, as before at Chicago. Mr. Smith succeeds **John R. Thompson,** vice-president, who has been named business manager of *Railway Freight traffic,* a new Simmons-Boardman publication.

Mr. Smith was born at Coal Valley, Ala., December 31, 1910, and received his education in structural engineering from the International Correspondence Schools. He entered railroad service in 1937 as a rodman-transitman on the Birmingham Southern at Birmingham, where

Fred W. Smith

he remained until 1941 when he became railroad engineer for Alvord, Burdick & Howson, consulting engineers, Chicago. In 1942 he joined the Simmons-Boardman Publishing Corporation as an associate editor of the *Railway Engineering and Maintenance Cyclopedia.* From 1946 until 1947 he served as associate editor in the purchases and stores department of *Railway Age,* and in the latter year

(*Continued on page* 88)

Supply Trade News (Cont'd)

was appointed sales representative. Mr. Smith was elected a vice-president of the corporation in February 1952.

Mr. Thompson was born July 23, 1900, at Toronto, Ont., Can., and received his higher education at the University of Toronto. Immediately upon leaving college in 1918 he became assistant financial editor of the Toronto Globe, with headquarters at Toronto, and from 1920 until 1923 served as a junior account executive in the advertising agency of A. McKim Ltd., Toronto. The following year he became advertising manager of the Consolidated Press, also at Toronto. In 1925 Mr. Thompson went with the Maclean-Hunter Publishing Corporation and for 13 years was manager of the firm's Chicago office. During the next three years he was advertising manager of Maclean's magazine, with headquarters at Toronto, and in 1940 returned to

John R. Thompson

Chicago as vice-president and treasurer of the corporation in full charge of the publishing activities of its business journals (Inland Printer, Chemical Industries, Rock Products) in the United States. Mr. Thompson joined Simmons-Boardman in August 1948 as western district manager of advertising sales, transportation papers, and in May 1949 was named business manager of *Railway Engineering and Maintenance*, which publication will henceforth be known as *Railway Track and Structures*. Mr. Thompson was elected a vice-president of Simmons-Boardman on February 14, 1950.

Obituary

John A. Ingwersen, vice-president in charge of distribution for the **Armco Steel Corporation,** Middletown, Ohio, died unexpectedly of a heart attack at his home in Middletown on December 5.

T. F. Scholes, president of **T. F. Scholes, Inc.,** a railway contracting firm in Reading, Pa., and president of the Associated Railway Track Contractors of America, was killed when his private plane crashed November 23 while en route from Reading to Camden, Ark.

Trade Publications

To obtain copies of any of the publications mentioned in these columns, use postcards, page 75.

Chain Hoists—The Harrington Company has recently issued a new 4-page folder describing Peerless Packet chain hoists. Special features of the hoists are illustrated and complete specifications are presented for both hook-suspended and trolley type hoists.

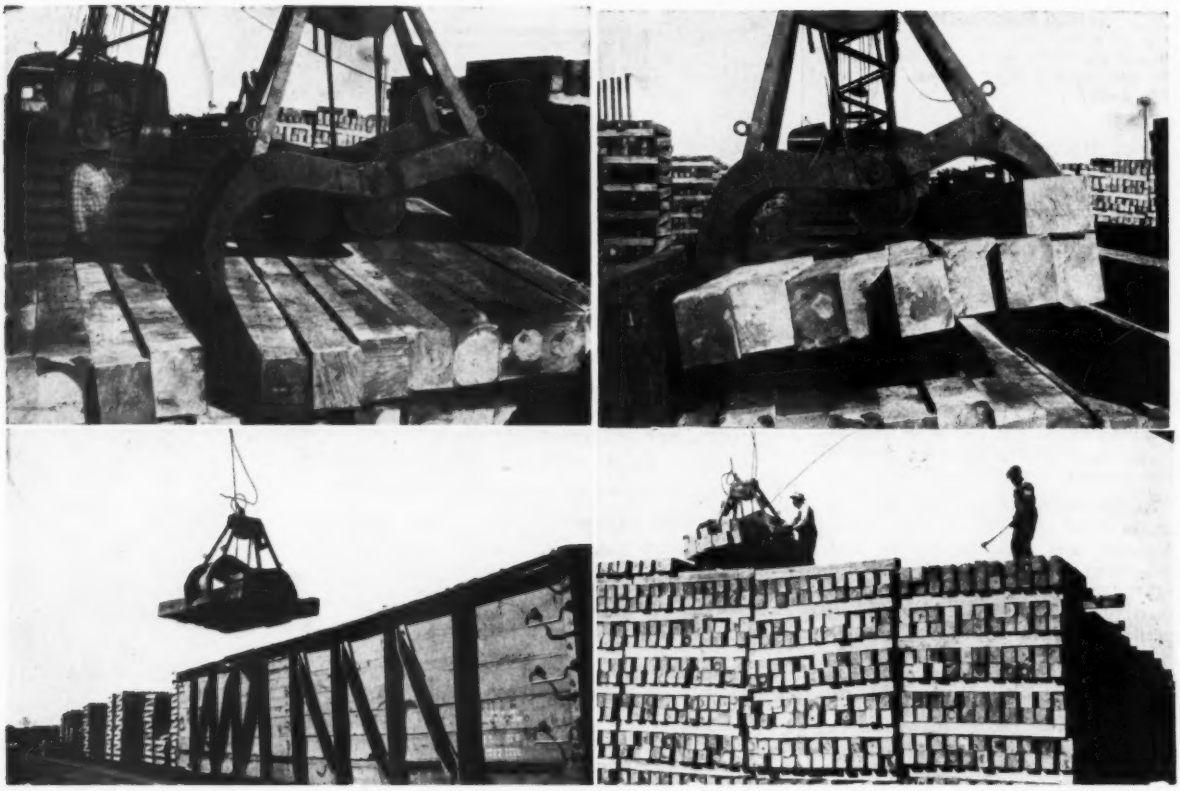
Wrought Iron Pipe—A 4-page, 2-color brochure has recently been made available by the A. M. Byers Company containing five tests for the positive identification of wrought iron pipe. The identification booklet also tells why recognition of piping material is important and explains how to protect against the use of substitutes.

Tubular Piling—A new 24-page catalog, identified as catalog No. 81, covering Monotube steel piles, has recently been released by the Union Metal Manufacturing Company. In addition to complete descriptive information and simplified specifying data, the new booklet includes a broad range of typical installation photos, test driving data, and other technical information of particular interest to engineers and contractors.

Metallizing—Maintenance-free, life expectancies upwards of 25 to 30 years on iron and steel structures and equipment are claimed in a new bulletin released by the Metallizing Engineering Company, Inc. The bulletin describes and illustrates the application of 18 basic engineering specifications of coatings which are said to provide long-term, economical protection against corrosion. Shown are several typical applications, including the metallizing of electrical underground conduits, tank interiors, and a coal barge.

Truck Shovels—The Quick-Way Truck Shovel Company has recently published a new, 28-page, 2-color booklet describing the Quick-Way truck shovel and its attachments. The booklet shows the actual part-by-part assembly of the truck shovel at it moves through the factory production line. Numerous field photographs show the units as employed on a variety of jobs equipped with various attachments. Engineering data on mechanical features and construction, together with complete specifications and charts on digging ranges of each of the four available models, are covered in detail.

Rust Prevention—A new full-color, sound movie entitled, "The Captain's Idea," has recently been released by the Rust-Oleum Corporation. Employing a new approach in movie filming, this new 30-min. film includes a lighthearted, fast-moving plot with a complete cast of talent and thousands of miles of filming on actual location. The entire 13-mm. movie is in full color with synchronized sound. It is specially designed to hold the interest of all types of audiences. Subtly woven into a new version of "boy gets girl," the film shows ways to stop rust and cut costs.



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Made in 4 Standard Sizes or Special to Customers Order
Any crane equipped to handle a clam shell bucket will handle a MACK Grapple.

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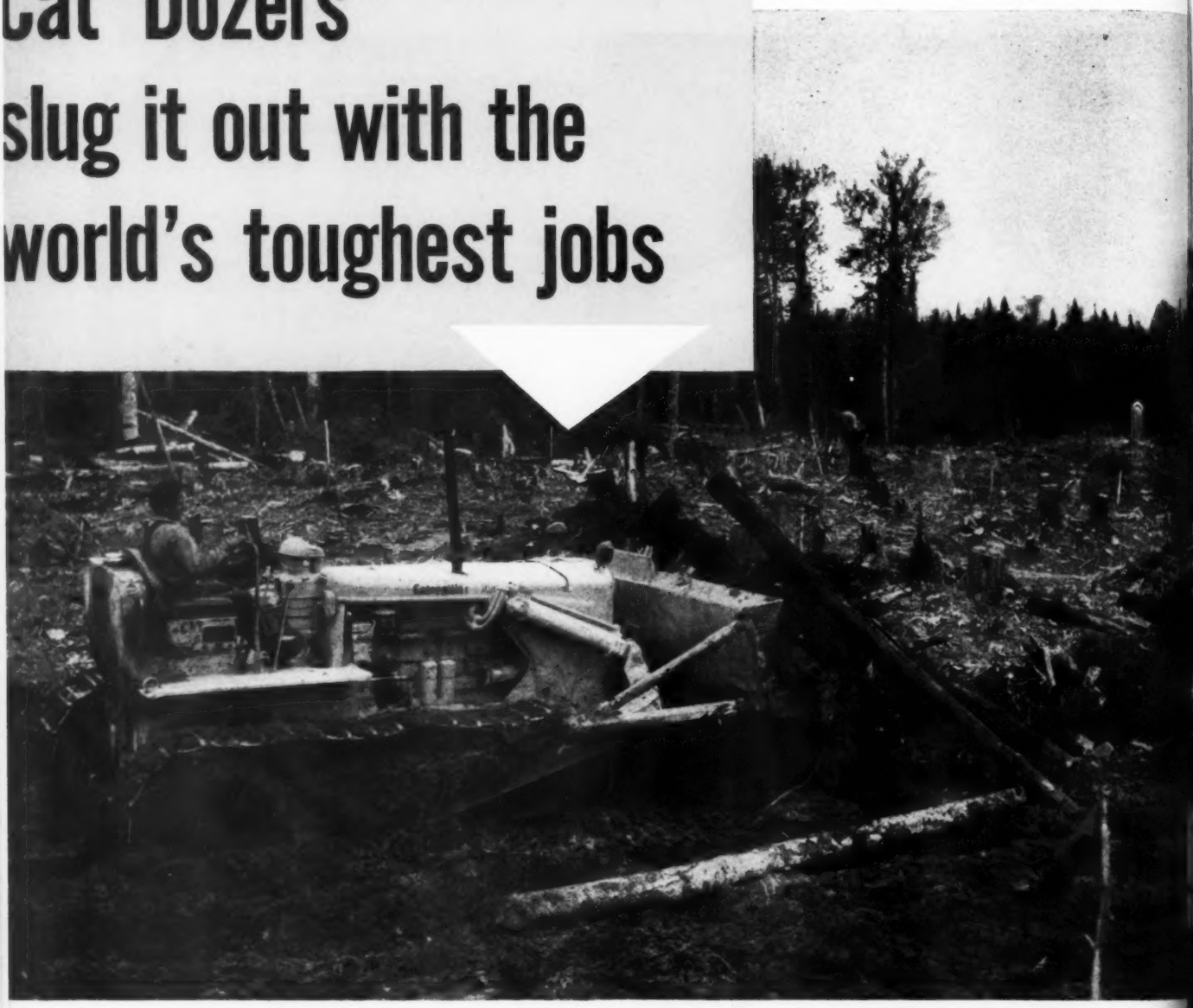
Advertisers IN THIS ISSUE

Cat 'Dozers slug it out with the world's toughest jobs



A D6-No. 6A Bulldozer, owned by the Q.N.S.&L. Railway, clears land for a railroad grade near Seven Islands, Quebec, Canada.

WHEN the Q.N.S & L. Railway had to drive a right of way through the bush for a new line to the Canadian iron mines, it needed tough equipment. A Caterpillar D6 Tractor with No. 6A Bulldozer got the call, and it met the test.

There are many reasons why the big yellow 'dozers are chosen for jobs like this. They have no equal as earthmovers because the scientifically curved moldboard *rolls* earth instead of pushing it. Heavy box section reinforcements run the full length of the blade, giving added strength and rigidity. The cutting edge is of high carbon steel for strength and abrasion resistance.

Wherever strain or severe wear is likely to occur, parts are heat-treated to strengthen and toughen them. Because Cat Bulldozers have no overhead frame, the operator can see where he is going and watch the corners of his blade. And the high lift feature is especially useful in pushing over trees or gouging into hills.

Your Caterpillar Dealer has a comp'ete line of sturdy Cat Bulldozers, matched to all tractor sizes. He'll be glad to demonstrate the unit you need for off-track use. And he'll back its long work life with reliable service and a full stock of genuine Caterpillar parts.

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One of the marvels of engineering skill is the track of American railroads. It takes a terrific beating under every extreme of weather.

It is subjected not only to constant expansion and contraction but to tremendous shocks and stresses, as heavily loaded freights and fast passenger trains roll over it.

Fine track must have what it takes, and that's why the roads spend so much to lay it well and maintain it carefully.

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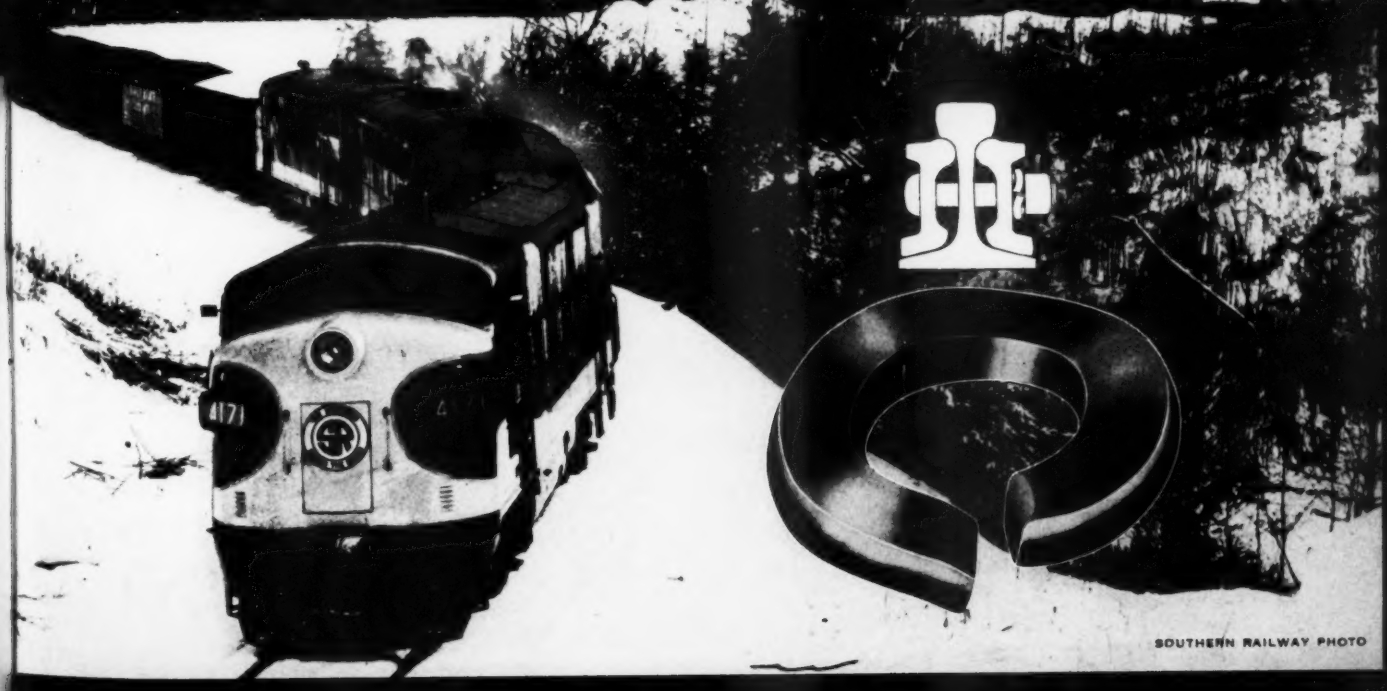

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